Translator's Foreword

The aim of this book is two-fold; to tell the story of glassmaking from its origins down to the present day (see the extended picture captions), and to examine glasses which are typical specimens of each period in an effort to explain to the reader wherein lies their originality and charm (see the explanatory text). The excellent quality of the photographs allows the reader to grasp very easily the point the author is trying to make, and enables him to come to his own conclusions about the aesthetic value of each piece.

A work of this kind cannot, of course, include illustrations and descriptions of every worthwhile piece of glass, and it is to be hoped that readers already familiar with the subject will not be disappointed if they find their favourite piece has been omitted. Indeed it is one of the merits of this book that space has been found for many less well-known, but beautiful, works; and the author must be congratulated in particular on his coverage of some important fields of continental glass all too little known in the U. K. and U. S. A. The result is therefore not only an original and important survey of the whole history of glass, but a work that complements rather than repeats the coverage of other publications.

The translator and publishers would like to thank Mr. R. J. Charleston, Keeper of Ceramics at the Victoria and Albert Museum, London, who so kindly offered suggestions for improvement and correction of the translated text.

E. Launert

Contents

Introduction

A history of glass will naturally concern itself chiefly with the artistic forms into which the material is fashioned, and will disregard the purely functional glass made in the service of science and technology. In an attempt to reveal the factors which determined these artistic forms, a general survey of the technology of glass itself is essential, and only through an understanding of the material can we arrive at a complete appreciation of the individual decorative piece. From the briefest study of the various forms which objects in glass have taken, and of the scientific and technological progress made in glass-making throughout the centuries, it is immediately obvious that these two aspects of our subject are interdependent; the end product is always a direct result of some technological innovation, of the discovery of a way of improving and exploring the qualities of the material.

In some periods of history, glass was worked in imitation of some already familiar material; in other words, objects in glass tended to resemble those being made in metal, porcelain or precious stone. The peculiar qualities and potentialities of glass slowly became apparent, and modern glass, which shows a complete sympathy with the unique nature of the material, serves as an indication of the great advances which have been made.

In the earliest times articles in precious stone served as a model for work done in glass. The Greeks referred to glass as *lithos chyte* which means 'cast stone', and its success depended on how far a jewel-like quality had been obtained.

The most ancient glass objects we know, dating from the third millennium B.C. and discovered in Egypt and Babylon, are tiny, coloured opaque or faintly translucent pieces used for inlay work. The clearest idea of the jewel-like appearance of Egyptian glass may be had by looking at the burial treasure of Tutankhamen, housed in the Cairo Museum. The gold surface of the sarcophagi is inlaid with small pieces of lapis-lazuli blue, turquoise and jasper-red glass. Parts of the throne are of glass. Precious stones and glass were used side by side by the Egyptians, and glass was by no means considered an inferior material. The appearance of precious stone is maintained in the earliest glass vessels known to us. The

enchantingly beautiful cup which belonged to Thotmes III, and is the oldest example in existence, is made of turquoise glass ornamented with blue, white and yellow threads.

In later times, Egyptian glass lost its original sacred function, but not its position as a luxury nor its resemblance to precious stone. In the last century B.C., glass vessels in imitation of jasper, agate and onyx were still being made. The Murrhine bowls which were famous in the ancient world, and of which Cleopatra is said to have possessed a costly collection of three thousand, belong to this tradition.

Glass has undergone the same type of treatment from all races in their early attempts to make use of it. The Celts never progressed beyond the first stage, fashioning only rings, beads and bangles from it. The Germanic peoples, who imported glass from the Mediterranean lands, in their turn related it to a precious stone, calling it *glesum*, their word for amber. At this time glass vessels were made in the following manner: a core of sand held by a metal rod was repeatedly dipped into molten glass, rolled and smoothed, so that a thick layer of glass adhered to the core in the manner of a glaze. The core was removed after the glass had cooled.

Just before the first century A.D. the discovery of a new technique in glass-making, which followed on improved furnaces opened the door to new and exciting possibilities. It was discovered that when the glass was red-hot and soft enough it could be blown into a bubble. From that moment, the glass blower's pipe has been the most important instrument involved in the production of glass.

In this period arose the legend of the unbreakable glass. Several Roman authors tell the story of the glass-maker who is said to have proudly offered the Emperor Nero an unbreakable glass. "But Emperor Nero," wrote Johan Mathesius in 1554 in his *Bergpostilla*, "the monster, was not desirous to see the value of gold and silver thus diminished, as would have happened had beautiful glasses lost their fragility; so, it is said, he had the craftsman exiled and his workshop destroyed." The legend is interesting in several respects. It was certainly occasioned by the invention of blown glass, with its unusual, metal-like appearance. The Sidonian glasses of the first century, particularly, which were made by blowing into a mould, and which were exported to Rome in large quantities, give the impression of being made in metal, especially as they have the shape of metal vessels, or a surface treatment resembling that used for metal.

There is also the possibility that the legend, which incidentally attributes the evil deed to various Roman emperors, has some connection with the

early glass trade. The market price of Egyptian and Syrian glass was extraordinarily high at the time of the early Roman emperors. Glass objects forming part of the booty of the Persian and Egyptian wars were considered valuable enough to be carried in triumphal processions. Incredible prices were paid for glass at state auctions, and at the lavish banquets of the time glass vessels outdid golden goblets in popularity. There were already glass collectors of note in Rome at this time. Pliny tells us that when Petronius, Nero's master of ceremonies, was languishing on his death-bed he dashed a glass bowl of great beauty to pieces rather than let it fall into his master's hands.

Inevitably glass production was streamlined, and the commodity became cheaper and adapted to daily use. The glass became the normal drinking vessel. Luxury glass was, of course, still made, but along with this household glass was produced, as it still is; in other words, we see the manufacture of ordinary glass, whose basic forms are determined by function, hardly changed up to the present day. Practical shapes easily obtained by the glass-maker have proved their worth to succeeding generations. Among the vessels produced at this early time of glass-making, we note basic, vigorous shapes resulting from the processes involved and not outmoded or improved upon by the modern counterpart of the early glass-maker.

But to return to the luxury glass which represents the highest achievement of craftsmen and artists. This did not undergo all the stages of its manufacture at the hands of the glass-blower, but was enriched by techniques originally adopted for other fields of art; thus glass became the vehicle for the inspiration of the painter and the engraver, was gilded, cut and facetted as other objets d'art had been. Sometimes the application of such forms of decoration has been a case of "gilding the lily" and the actual metal has lost, rather than gained, and is hardly recognisable as glass. This was particularly the case during the latter part of the nineteenth century, and the later rejection of many of the decorative techniques mentioned, and the stress on the nature of the metal and the simplicity of its form were a reaction against the over-lavishness of earlier decorators.

Glass was from the first made in imitation of precious stones, and, logically enough, the art of the gem-cutter was practised on it. The most famous example of this work is the Portland Vase in the British Museum. Just as gem-stones with two or more strata of contrasting colour were cut to reveal this contrast, here the white glass overlay has been cut to reveal the blue glass beneath, but so skilfully that many nuances of blue and

white have been achieved. In comparison with the Portland Vase, earlier Cologne *Zirkusschale* attempts at glass-engraving necessarily appear primitive and ill-conceived, although in the latter case the cutter was working on thin blown glass which did not lend itself easily to the technique. The difficulties involved are revealed by the unevenly executed decoration of scratched lines (see plate 39). One and a half thousand years were to pass before a glass of suitable thickness was produced, enabling engraving of a high quality and degree of accuracy to be executed.

On the other hand, decorative techniques which were a natural consequence of the discovery of glass-blowing were soon mastered. By these are implied firstly blowing into a mould, and secondly the application of molten glass to form threads, drops, decorative handles etc. These techniques have persisted, gaining or losing in popularity, throughout the centuries, and are perhaps derived from the craft of the metal-worker.

In the first and second centuries, Syrian glass shows a preference for mould-blown decoration, later for applied ornament. The same development is evident in Rome and in the Rhineland of Roman times. The mould-blown bottles in the form of the human head, grape clusters and so on are already examples of mass-produced objects. It is no more complicated a matter to produce them, once the mould has been prepared, than it is to produce their plain, undecorated sisters.

This cannot, however, be said of the Rhenish snake-trailed glasses, often masterpieces of skill and patience, although vessels with simpler trailed patterns have been produced in great quantities from the time of the main period of Rheno-Roman glass-making, through the Middle Ages, (in the *Waldglashütte* or small forest glass-houses), down to the eighteenth and nineteenth centuries when they again occur in Spanish and Persian work.

The highest achievement of this metal-inspired glass may be seen in the German *Waldglas*. Contemporary artistic taste, along with the technical possibilities and limitations of the craftsmen in these small forest establishments, determined its quality and appearance. It must be remembered that the collapse of the Roman Empire meant an end to Roman trade. The soda which had been imported from Egypt for the use of the Rheno-Roman glass-makers was no longer obtainable. As a result, in the seventh century, potash was adopted as flux by northern glass-makers. This was obtained from beechwood, which was readily available in unlimited quantities, and produced a glass which was sturdier and heavier than the ancient soda-glass. Another ingredient, the local sand, gave it a characteristic green colour, since it had a high iron content. This "impurity"

of colour in *Waldglas* is one of its attractions. Its charm also lies in the form of the vessels into which it is made: spiny *Nuppengläser*, prunted *Römers*, ribbed *Maigeleins*, all reflecting the spirit of the late-Gothic period.

A very different kind of glass was made in Venice. Here the ingredients which had been used by the glass-makers of classical times were still available, in particular Egyptian soda, thanks to the city's continued trading connections. These ingredients, the artistic taste of the time and local conditions proved a most fortunate combination of factors. For probably the first time in glass history, our material emerges as something individual, something valuable in its own right. It has been ennobled by the refined simplicity of form given to it by the Venetians. The clean, harmonious lines of Early Renaissance architecture are transferred to the plain thin-walled glasses, produced for a discriminating society which could appreciate and enjoy subtleties of proportion and design. The *cristallo* glass, Venice's most important export commodity, was the main concern of the very highly esteemed Muranese glass-makers, many of whom were adopted into the nobility and were headed by a Burgomaster who had the authority of a doge. The delicate, almost weightless Venetian glasses cannot be compared with any other creation, unless it be that other exquisite product of Venetian skill: lace. The effect of lace was, as we know, reproduced in glassware; the *vetro di trina* of the sixteenth and seventeenth centuries has always been eagerly purchased by connoisseurs and collectors, as the Rosenborg Castle collection near Copenhagen shows.

German *Waldglas* and Venetian soda glass of the classical period nevertheless have one thing in common: both were produced in their finished state by craftsman in the glasshouse, who rejected adventitious decorative additions which were not part and parcel of the actual process of glass-making. The glass-makers of both kinds developed their skill to its utmost heights.

New ideas on the subject of glass were, however, beginning to make themselves felt in Germany during the sixteenth century. While Venice was intent on the transition from Renaissance to Baroque forms, creating increasingly elaborate and ingenious pieces, Germany was turning its attention to the decoration of glass by painting. Enamel painting had reached a very high standard in the East, particularly in Syria and Persia, in the thirteenth and fourteenth centuries. It was richly applied, and enhanced the glass itself, even if it disguised its basic texture. Enamel painting was executed in Venice in the early fifteenth century, and found

its way thence to Germany in the sixteenth century, where it developed into a popular and unpretentious art. The word "art" is, in fact, hardly applicable here. The shiny walls of the *Humpen* and *Passgläser* became the canvas of the primitive artist. There was no artistic correlation between the glass-maker and glass-decorator. In Holland, where diamond-point engraving was also used during the same period for the execution of a somewhat primitive art, the same tendency to cover the glass with pictorial decoration is evident.

Meanwhile a new discovery was to revolutionize glass-making yet again. In Prague, the gem-cutter Caspar Lehmann, seeing the possibilities afforded by the improved potash glass, applied the cutting and engraving techniques of rock-crystal to that medium. One of his pupils, Georg Schwanhardt, transferred the imperial privilege for this type of engraving to Nuremberg, which thus became the main centre of glass-engraving in the seventeenth century. *Intaglio* engraving here attained its supreme expression.

The discovery of Bohemian potash-lime glass in the late seventeenth century made it possible to produce a metal of sufficient thickness for engraving in higher relief (*Hochschnitt*). The magnificent covered goblets of this period, cut and facetted to afford the maximum dispersal of light, are an essential manifestation of the spirit of the Baroque. Now it was the turn of Bohemia to become the most important centre of glass manufacture.

The final development in the enhancement of glass by cutting took place in England during the eighteenth century with the production of English lead crystal. Glass-makers were driven on by the desire to extract the maximum effect from the play of light, with the constant comparison of the glitter of the kingly diamond before them. Once more glass was worked in imitation of a precious stone, not this time in the opaque colours of the turquoise, lapis-lazuli or jasper, but colourless like the diamond. Only one other stone has an equal appeal: the ruby, which had driven generations of alchemists, goldsmiths and glass-makers to continual experiment in an effort to produce it artificially, until Johann Kunckel achieved a satisfactory imitation.

The name of Johann Kunckel is bound up with another stage of development. Now the emphasis is placed on the technology of glass-making. His *Ars Vitraria* is a survey of all the known methods of glass-making of his time. Hitherto, all efforts had been directed towards producing a metal of a quality suited to the purposes of the artist-engraver, but now that such a metal had been obtained in English lead-glass, we see a new approach: to create new kinds of glass by experimenting with various

techniques held more attraction for the glass-maker than to produce continually the same metal for traditionally engraved vessels. The great names in nineteenth century glass-making are those of men who, like Friedrich Egermann, were first and foremost glass technologists.

We cannot, however, deny that glass in certain ways gained from this attitude. Sometimes it took on an exciting new appearance. New kinds of glass were created, such as Hyalith which resembled black Wedgwood ware, or Lithyalin, closely imitating red or grey marble, and new colours, perhaps in the form of stains or thin flashings. Old colours and techniques were revived, too, in accordance with the prevalent taste for historical rediscovery. At this stage, pressed glass and transfer decorations came into being. The well-proven techniques of preceding centuries were, of course, still employed. At the beginning of the century Samuel and Gottlob Mohn and Anton Kothgasser followed in the steps of the enamel-painter Johann Schaper, and Dominik Bimann continued in the Bohemian tradition of glass-cutting and engraving.

The *Art Nouveau* or *Jugendstil* movement has a remarkable place in the history of glass. One of its sources of inspiration is illustrated by the fact that the French artist Emile Gallé, working in Nancy, and the American, L. C. Tiffany, both took as a model Far Eastern glass which bears a closer resemblance to porcelain than to glass in its usual form. Chinese snuff-bottles, for example, made of opaque white glass with a carved casing of blue or red, are very like the fine semi-translucent porcelain produced by that country. Some of Gallé's opaque glass has the quality of Chinese jade when held against the light, and when light falls on its surface it has the appearance of porcelain. Tiffany's pieces have nothing of the accepted character of glass, but with their metallic surfaces rather remind one of the coppery glazing of modern faïence. This transformation of the natural character of glass marks both Gallé and Tiffany as artists of the nineteenth century, but they nevertheless paved the way for the interpretation given to the material in the twentieth. Certain precepts of theirs are still valid: their vases were not to be mere vehicles for a picture – on Gallé's the decorative element consists of exotic plant forms, on Tiffany's of an overall rainbow-like shimmer. In both cases the ornament has been suggested by the nature of the vessel itself; it is an intrinsic part of the vessel, and not foreign to it. It is, perhaps, a new understanding of this point which has brought about a revision of opinion on the subject of *Art Nouveau* glass.

In the years immediately succeeding this period, it seemed as if a return to cut glass was imminent. In 1925 Emil Pazaurek, the leading glass

expert of the day, observed: 'The so-called *Jugendstil* period has quickly flown past, but what I consider to be the supreme expression of glass, namely cut crystal-glass, has experienced a remarkable rise to popularity now that it has cast off the fetters of traditional patterns'. He concluded from this that the twentieth century would be the great century of glass-making.

Pazaurek's prophecy has proved true, but in an entirely different way from what he envisaged. Glass-making developed along other lines. The unforeseen uses to which glass could be put, and the discovery of new and valuable qualities in the material have caused us to consider it afresh. We have discovered that it can be as hard as iron, that it can be elastic and unbreakable, we have learned how to spin it into threads and produce glass fabrics, and we have seen that it can conduct electricity. It has become a valuable part of our lives, and without it scientific experiment and industrial achievement would not be possible.

About the year 1930 came universal appreciation for the new style in glass, which delighted in a thick undecorated metal. In order to give the actual material its best expression, austere, massive forms with a certain tension of line were favoured. Function, a factor which dominates twentieth-century design and which was propounded by the *Bauhaus* group, also determined the forms of glass creations. The most natural forms adopted by glass are those of the sphere and the tear. The glass now relied for its beauty on its own appearance of purity unsullied by distracting decoration, and on the ever-changing intensity of light and colour in its undulating lines. The fifties saw the supreme expression of these principles, but as with all such principles, desire for change or for revision began to appear. The eye has tired of the simple, basic presentation of the material and now seeks pleasure from nuances of colour, contrasts of surface effects, even the demonstration of complicated technique. Cased glass, mosaic techniques, and air-bubble decoration have regained favour in new and adventurous forms. The idea of function and emphasis on the nature of the raw material is gradually being replaced by that of beauty created by technological means.

To sum up, it would seem that with all these means at its disposal, the art of glass-making has returned to its beginnings and is eager to experiment with new meaning in the never ending search to express the beauty of glass.

Illustrated Section

1 Beaker of Thothmes III

The oldest glass vessels which have come down to us were fr
Egyptian Pharaohs This famous beaker of Thothmes III represe
beautiful example
The glass, which has the shape of a lotus bud, was moulded on a cl
the lotus flower appears time and time again, often stylised on pc
architecture The petals of the lotus flower were also often used as
decoration of stone, metal and earthenware In this beaker the
technique which is only applicable to glass threads of glass were
and rolled into the surface of the hot and therefore soft, material
dragged vertically into zig zag shaped bands by a pointed metal
ment is much in evidence on Egyptian glass
The cartouche gives the names Ra Men Kneper of Thothmes and t
on the buckle of his statue in the Cairo Museum
Thothmes III was one of the most important pharaohs of the 18th D
the boundaries of Egypt were at their widest, stretching from the Eu
the domination of Egypt by the foreign Hyksos dynasty ceased,
new peak during the Amarna period, and as a result crafts and a hig
glass making flourished



2 Head showing the face of Amenhotep III

The head belongs most probably to a Ushabti-figure modelled
He was the father and predecessor of Akhenaten who founded
which means representatives are images of servants, which were
in their tombs in order to represent them when their masters
tasks in the after-life



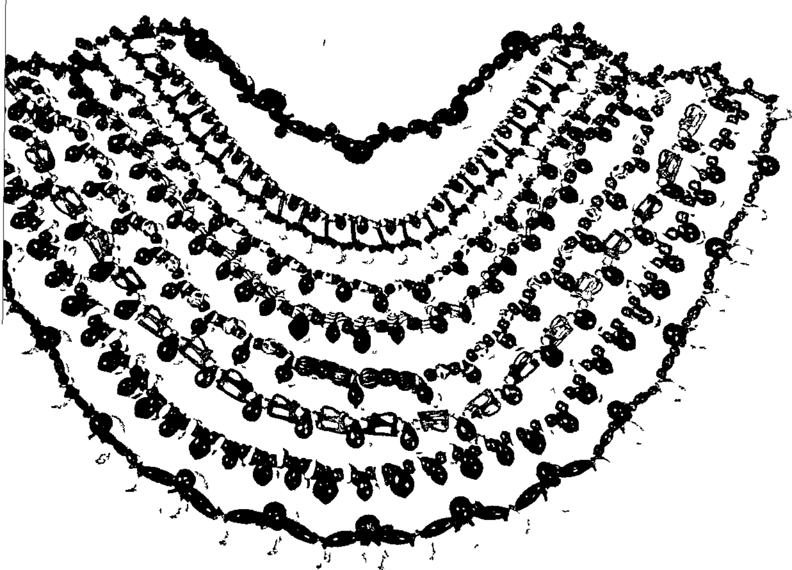
2 Head showing the face of Amenhotep III

The head belongs most probably to a Ushabti figure modelled after the face of Amenhotep III He was the father and predecessor of Akhenaten who founded El Amarna The Ushabti, which means representatives, are images of servants, which were to accompany the deceased in their tombs in order to represent them when their masters were called upon to perform tasks in the after-life









of a Nubian Queen

In his search for antiquities, the Italian Ferlini who was employed by the Egyptians started, in 1834 to dismantle one of the small steep sided pyramids of Meroe, once the capital of the Nubian Kingdom This venture, which nowadays would be beyond our comprehension was crowned by success he found the treasure of a Nubian Queen unidentified to this day who reigned in Meroe in the first century B C To her treasure belonged the necklace which is illustrated here, though not in its original state The parts consisting of natural shells, golden links in the form of eye-amulets, cornelian, faience and glass beads, connected simply by traces of string, were reassembled to make two necklaces later The glass beads appear in a variety of shapes, *some are fluted gilt or layered, others are opaque-white or red* and tear shaped The Egyptian technique of melting glass threads into glass surfaces, as employed to make the eye beads, continued over one and a half millennium

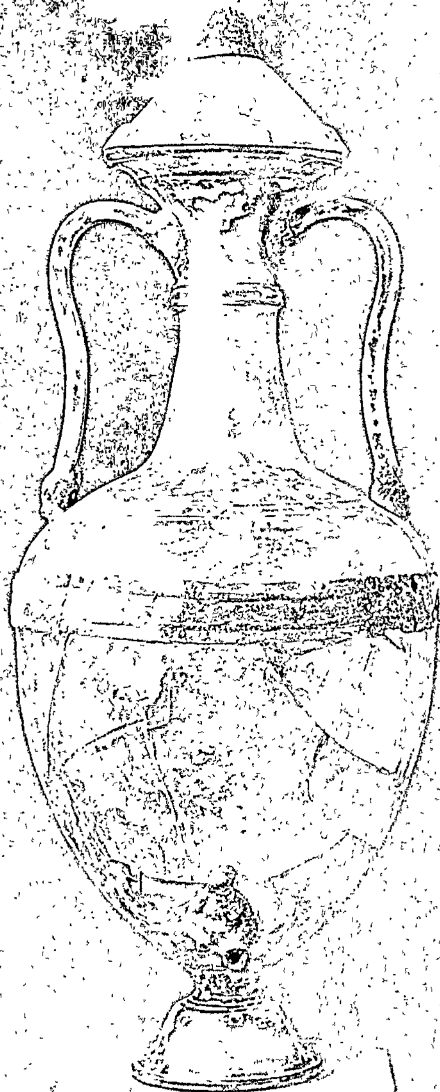
Large amphora

The art of glass making received no impetus in ancient Greece There was no demand for household glass because the art of pottery was highly developed The few glasses which have come down to us were most probably imported from Egypt and Syria This also applies to the illustrated amphora

The vessel about 60 cm in height, is one of the most exquisite pieces ever produced in glass It was not blown but manufactured in two parts which were probably moulded on a clay core and polished The joined edges are concealed by a gilt metal ribbon

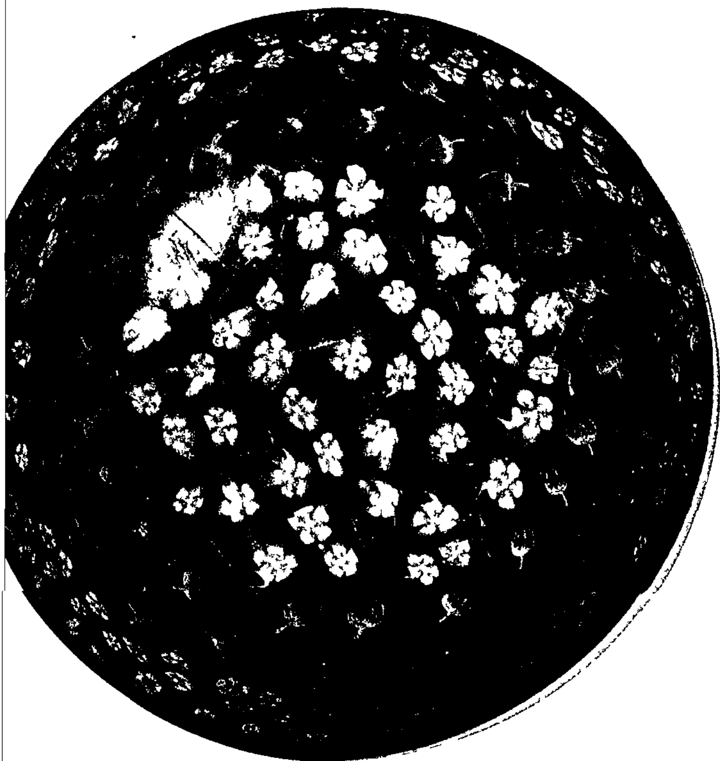
The shape of the amphora is true to the style of the period and is of the type of panathenaic amphoras Though it is the only known example of its kind, it demonstrates how the translation of shapes of Greek ceramics into glass forms, even if not wholly appropriate to the material, has resulted in a vessel of outstanding beauty

Olbia where the amphora was found, was the most important trading place in the Pontus, a cross road for the exchange with Kiev and the Baltic countries The amber trade was also conducted via Olbia



Millefiori bowl

The bowl belongs to a category of glass vessels termed in the ancient tradition *tasa murrbina* In his 37th book of natural history Pliny reports that after his victory over the Persian King Mithridates Pompey brought 2000 Murrhine bowls to Rome which he dedicated to Jupiter The legendary Murrhine collection of the Egyptian Empress Cleopatra was disposed of by auction in Rome by Augustus At that time Murrhine vessels were highly valued Ancient literature reports prices of 70 000 sesterces which is about £ 1 000 in our currency The term *vasa murrbina* was a subject of scientific controversy for a long time Anton Kisa was the first to point out that they were made of glass and not of semi precious stones The production of millefiori glass demanded great skill A number of coloured glass canes were placed together to form a certain pattern such as a flower and melted together The resulting rod was cut into slices and these in turn were placed side by side and melted together In this way flat bowls with a continuous pattern were produced which finally had to be ground or polished





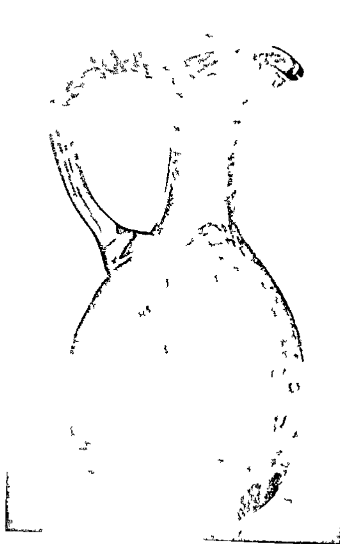
8 Ribbed bowl

9 Tall ribbed bowl

These ribbed bowls were made especially in Rome Gaul and on the Rhine during the first two centuries The earliest examples were mould blown and ground afterwards Later the method was simplified by applying glass threads to the surface of the blown bowl





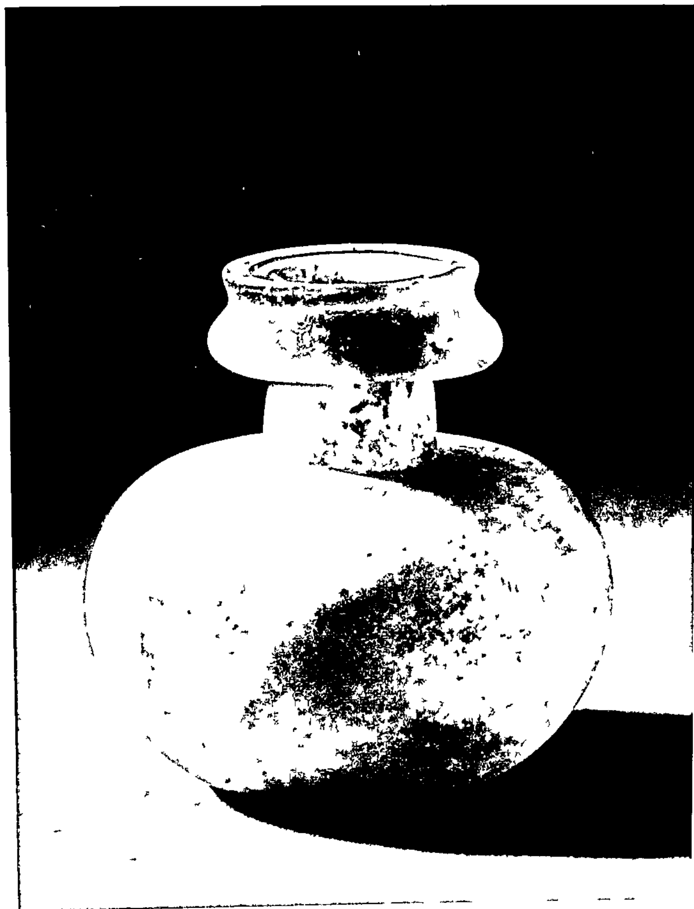


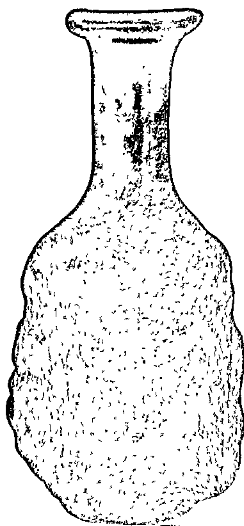
10/11/12 Syrian domestic glass vessels

With the invention of glass blowing the shape of glass vessels changed The basic shape o all blown glass is a sphere suspended on a hollow iron rod The hot pliable sphere is trans formed either by its own weight or by a swinging movement into a club or tear shaped body

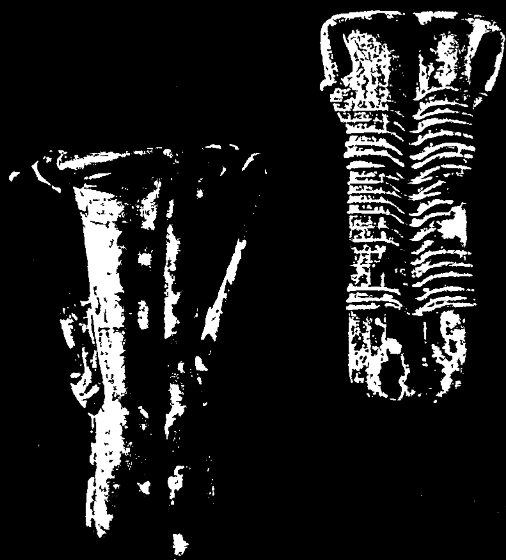
In order to make the vessel stand upright the bottom was flattened or even pressed n (kicked) and later from about the second century onwards a ring shaped foot was fixed underneath the bottle to improve its stability After cooling the neck was broken off the blow p pe The earl est blown bottles were left as they came off the pipe In later examples the mouth after reheating was enlarged into a funnel like shape pinched into a spout folded or after the first century a glass ring was applied just beneath the mouth At the same time bottles with handles appear which consist of thickish glass threads melted on to the vessel

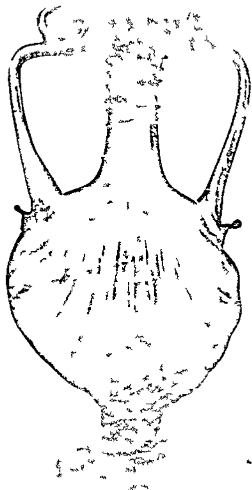
This method of glass blowing has remained unchanged until to day No wonder that the illustrated Syrian bottles appear so surprisingly modern Though swiftly made for everyday purposes they have an elegance of shape which shows a true understanding of the material





13 Bottle with relief decoration

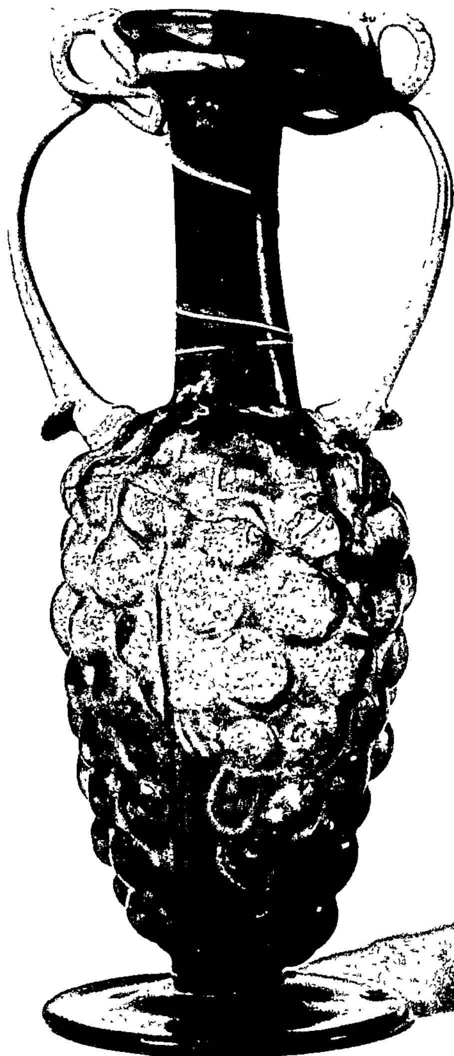




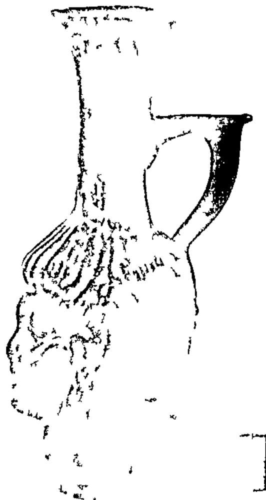
15 Shell shaped flask

16 Flask in the form of a bunch of grapes

The invention of glass blowing was soon exploited for artistic purposes The glass wa blown into a mould which usually consisted of two identical sections The ornaments we cut n relief into the interior surface of the mould In some not so carefully executed p ec a vertical l ne on the glass indicates the join ng of the mould
The earliest mould blown glasses were made in Sidon (Phoenicia) in the first centur There were several glasshouses and their products were traded far and wide The names of the glass makers appear moulded on their vessels the best known of these are Ennion Meges Artas and Ariston
Or ginally the imprinted mot fs were confined to parts of the surface but later they covered the ent re vessel The most common shapes used were shells and grape clusters In Rome bottles in the form of a head were much in fashion

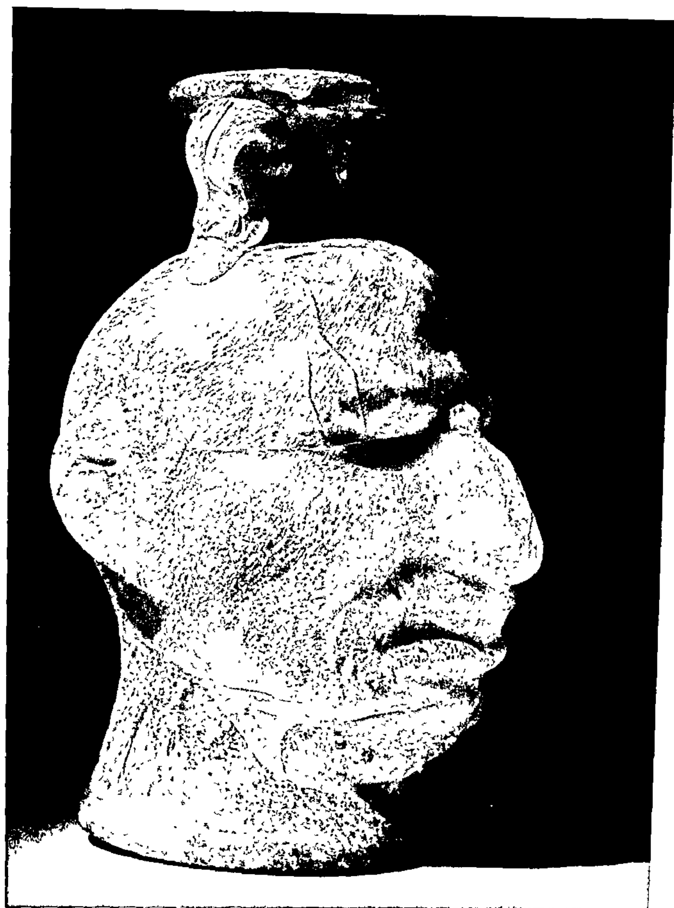


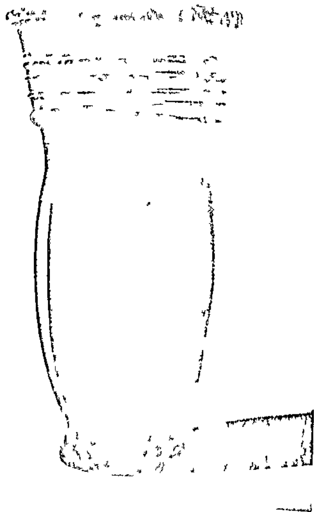




17 Flask in the form of a Janus head
18 Vessel in the form of a girl s head
19 Negro head bottle

Head shaped vessels wh ch played an mportant part in rel g ous r tes n early Greek and Cretan culture but were adapted for profane use dur ng the Hellenic per od fina ly lo the r ser ous character in Nero s Rome and turned into a vehicle for car cature Most of he head shaped glass vessels real st cally dep ct m sshapen faces for sheer amusement The features of Nero s court fool a shoemaker can be found hence the (German) name *S b gla er* (shoemaker glasses) wh ch is somet mes attributed to th s category of glasses The Emperor Commodus s sa d to have made such vessels h mself

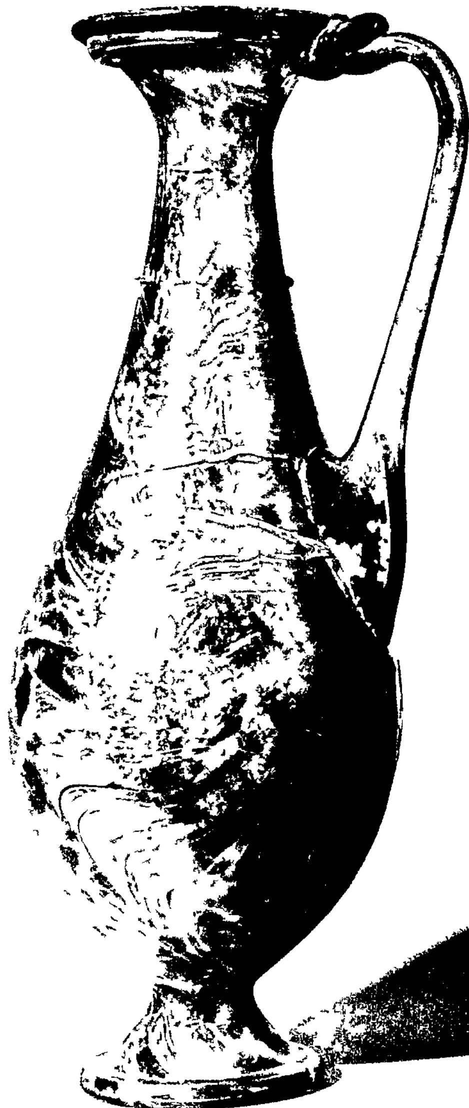


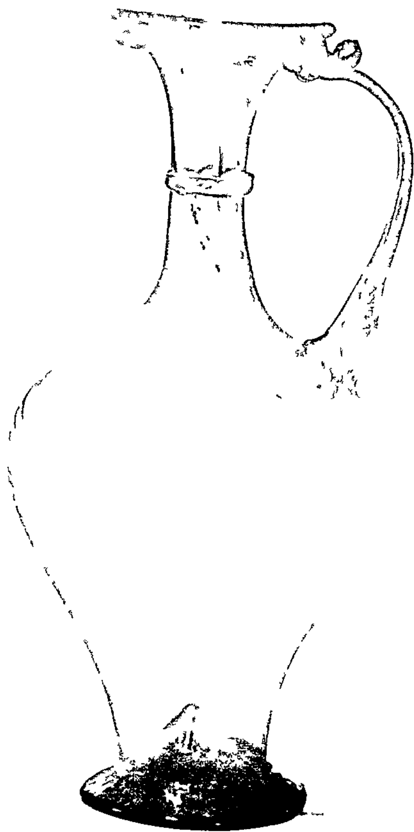


20 Ridged beaker

21 Pear shaped ewer

At the beginning of the first century the first imports of glass destined for the Roman up
classes arrived in Cologne from Egypt Syria and Italy Towards the end of the first centur
the first glass houses were founded in the Cologne area Following the Gallo Roman metho
of glass making they produced a simple glass for everyday use in blue green shades From
about the middle of the second century uncoloured glass was developed no doubt prec
pitated by the discovery of a sand which was ideal for the purpose This furnished the ba s
for the speedy development of glass producing around Cologne In the second half of the
third century a light green coloured type of glass was made The illustrated pear shaped
ewer stems from this period
The delicate outline of the slender ewer reveals its relationship to metal vessels nevertheless
the use of glass gives a new vigour to a traditional form The blown sphere was drawn ou
into a tear shaped body and the neck widened into a mouth Fused to the brim with a knot
shaped twist the handle displays a delightful elegance The attractive shimmer of the glass
is caused by the fact that the vessel was buried for a considerable time in the earth





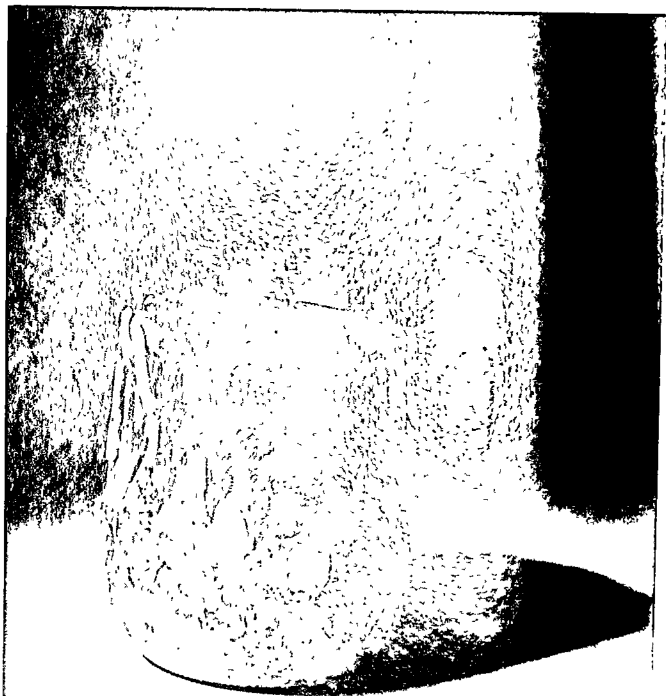
22 Free blown ewer

23 Cinerary urn

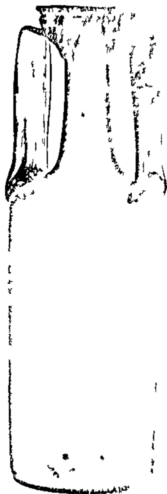


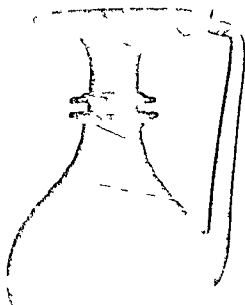
24 Vessel with trailed decoration

25 Small, five-handled amphora

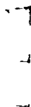












26 Stamnium

27 Pear shaped ewer

28 Conical ewer, or *Prochus*

Thanks to the late Roman custom of burying with the deceased gifts of food and drink a large number of works of glass were handed down to posterity During recent years many well preserved glass vessels of Roman origin have come to light during excavation especially in the Roman burial grounds around Cologne The immense treasure kept in the Romisch Germanisches Museum in Cologne nearly all stems from this area This fact enables us to appreciate the standard and achievement of the Cologne glass industry, and to reconstruct its development in the course of history

The variety of forms is extraordinary, though there are certain basic types such as the Prochus a wide conical ewer or the Stamnium a cylindrical bottle with two handles or the different kinds of the so called Lekythoi In each case one gets the impression that the shape achieved cannot be surpassed

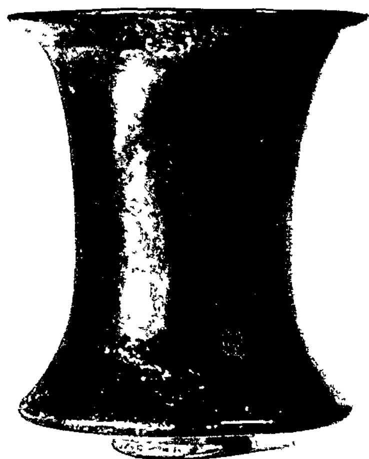
The way in which the glass threads were applied in the Lekythos with the double ringed neck is remarkable First they were laid vertically upon the small hot sphere, which was then enlarged and twisted at the same time resulting in the clear spiral relief on the vessel s surface



29 Small amphora with applied decoration







eaker





32 Pitcher with trefoil mouth and trailed snake ornamentation

33 Pear shaped bottle with trailed snake decoration

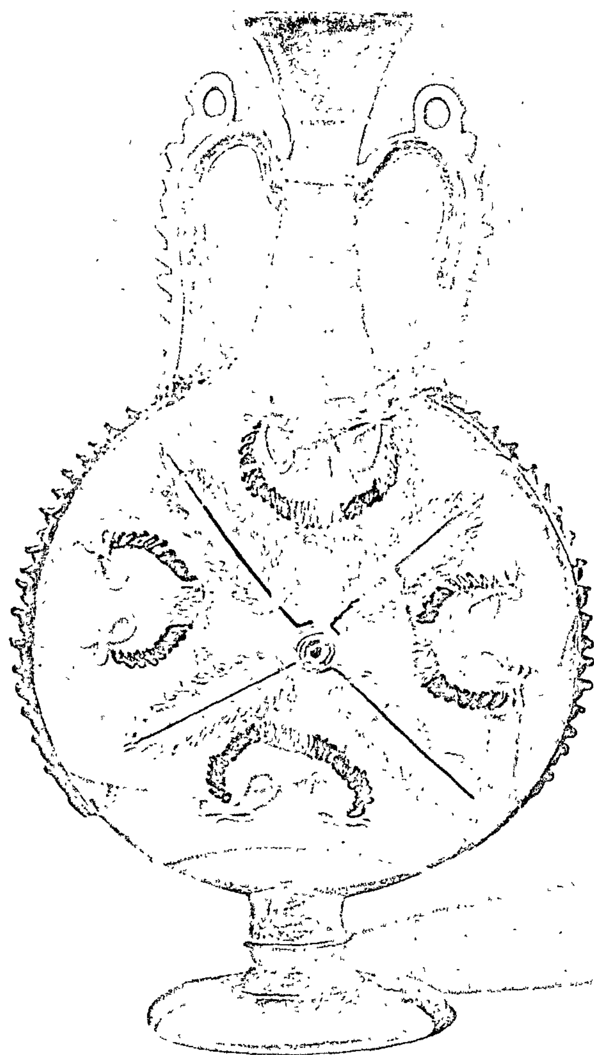
Vessels showing snake trailing generally indicate Cologne manufacture of the second thir
and beginning of the fourth century although they have occasionally been found with
the frontiers of ancient Gaul The decoration is applied in a somewhat haphazard way
seldom with realistic intentions These vessels are small masterpieces produced by un
doubtedly skilled glass makers The jug and bottle reveal their Syrian origin in the simpl
flowing lines whereas the classical form of the carchesium shows Graeco Roman inspiration

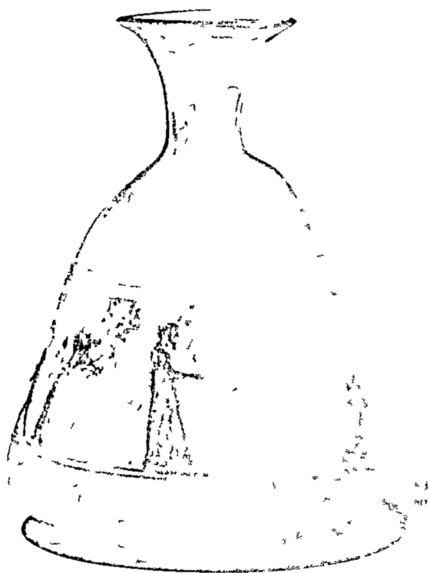
34 Bell-shaped beaker with stem (*Carchesium*)

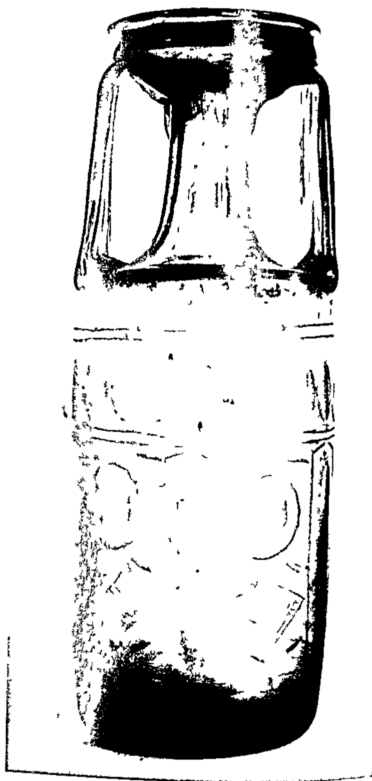


35 Pilgrim's bottle
with trailed snake decoration,
known as the *Meisterstuck*

This is the most outstanding of the Rheno Roman snake trailed vessels The flat surface of the bottle is richly ornamented with trailing with a gold spiral in the centre leaf motifs with blue midribs and gold edges radiating from it and garlands in blue, white and gold thread Thick pinched trailing has been applied to the handles and sides Fritz Fremersdorf the greatest authority on Rheno Roman glass gave to this bottle the name of *das Meisterstuck* by which it has since been known The decoration does indeed show masterly skill Extraordinary virtuosity was obviously called for to manipulate the vessel beneath the hot molten yet rapidly hardening glass threads and produce such a flowing design







k with gold painting
two handled bottle
cal bowl

The Roman craftsmen were familiar with most of the techniques in glass decoration practised today including cutting and engraving Late Roman glass cutting differs basically from the earlier cameo like work of which the most celebrated example is the Portland Vase In the latter we have the adaptation of gem cutting to the medium of glass usually opaque and often two layered In real glass cutting the craftsman was working with an entirely different material thin transparent glass As a result the cutting could only consist of shallow usually matt depressions or round and oval polished facets The decorative element is derived from the refraction of light through the concave surfaces



9 Shallow bowl with chariot-racing motif

This Rheno Roman dish, most interesting from both an artistic and historical point of view, was discovered in 1910 in a sarcophagus on the site of a Roman estate in Cologne Braunsfeld It lay on the breast of the dead woman, an indication of its superior worth among the burial objects

The profile of an emperor with crown and whip is surrounded by a view of a chariot race Four horses, each with a palm leaf plume, pull each chariot The chariot drivers lean forward, urging on their teams with the whip and grasping the taut reins Two of them are glancing backwards The site of the race, the Circus Maximus, may be gathered from the objects depicted between the teams the two turning points, indicated by two groups of three turreted buildings, which terminate the wall around which seven circuits had to be made, and in addition the obelisk which was situated in the middle of this wall The seven indicators, showing how many laps remained to be completed, are also visible In Rome, chariot racing and gladiatorial combats, two forms of sports introduced from Greece, degenerated, especially in the time of the cruel Emperor Tiberius, into a bloody spectacle which gave the host, usually the Emperor himself, the opportunity to flaunt his wealth power and favours

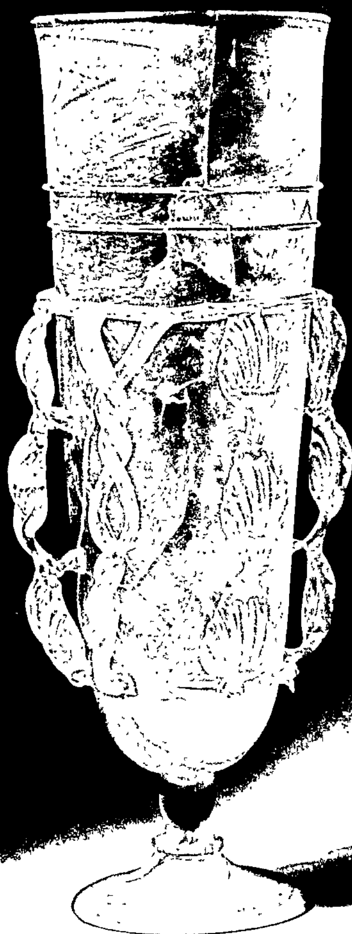
Introduced into the provinces, the games had a particular role to play, participation being granted to subject peoples as a high honour



Goblet with shell decoration

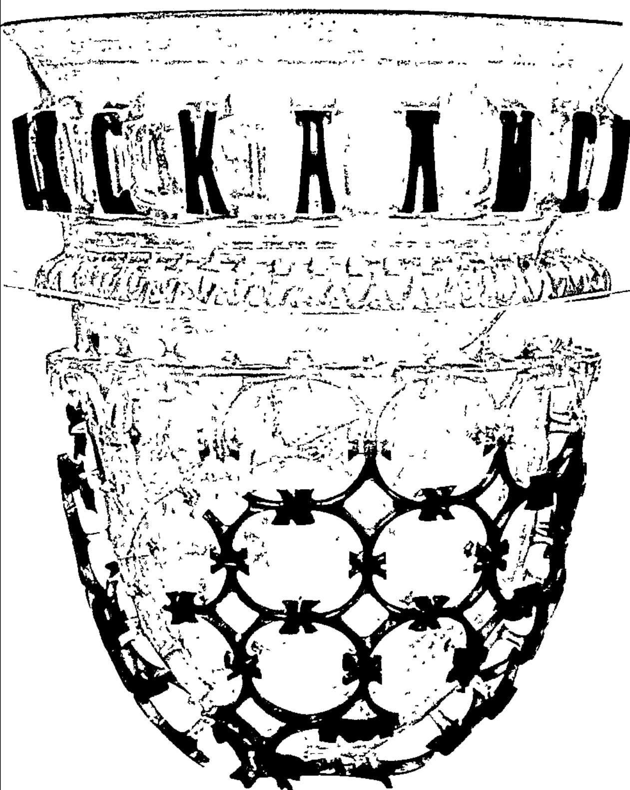
Cologne capital of the Roman Empire in the West had developed its own style in glass making Even when Eastern fashions arrived they were adapted by native talent as this intrinsically beautiful glass illustrates

The glass shows a combination of technical skill and artistic sensitivity Its main ornament consists of a cage of vertical trailing standing away from the body both of twisted and shell shaped pinched trails The height of the cage is equal to half that of the vessel itself Originally colourless the glass has become opaque white as a result of being buried for a long time This mastery of the art of trailing indicates that a Cologne glass house was the origin of this vessel







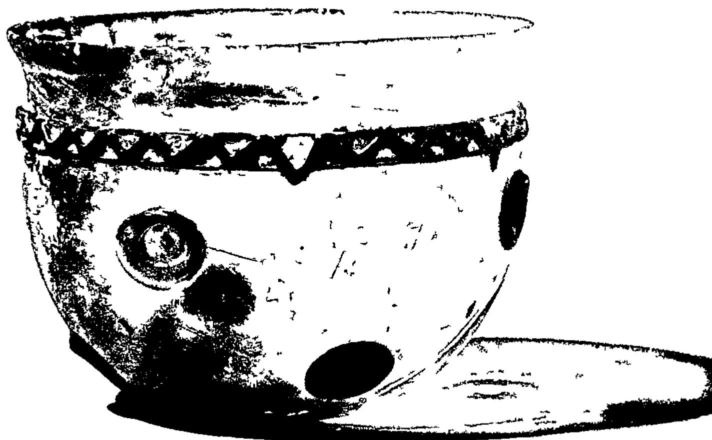


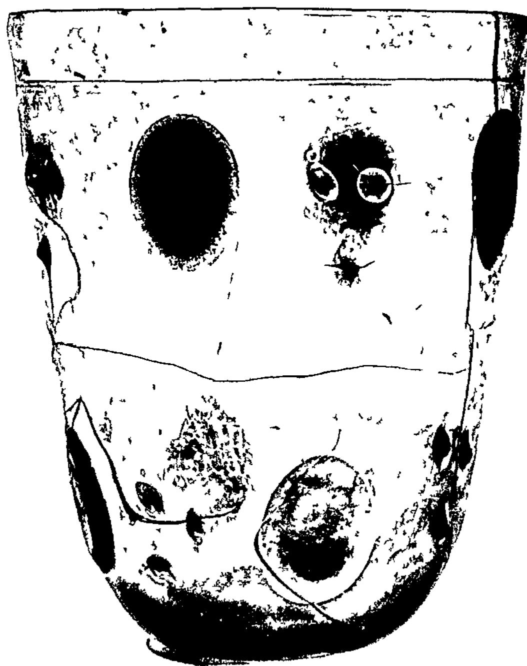


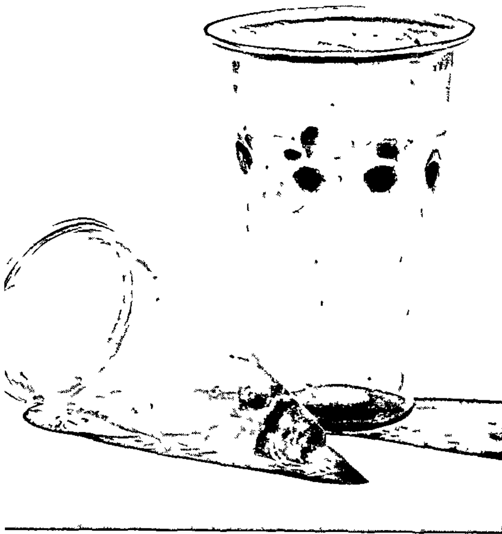
ll bowl in colourless glass
ailed coloured
g ornamentation
t button shaped blobs

aker with coloured prunts,
1 as *Humpen*

At the end of the fourth century the last Roman troops were recalled from the Rhine and Cologne the Roman Colonia Claudia Ara Agrippinensis became a Frankish town Long before this event however as early as 260 A D, shortly after the collapse of the Limes strong Germanic influence began to be revealed in Rheno Roman glass making This was partly a consequence of the southernward drive of German tribes on the east of the Rhine An illustration of a vessel showing Germanic influence is provided by the *Humpen* (nos 44 and 45) with their blob decoration and zig zag frieze In form they resemble the Germanic *Kummen* the earliest earthenware serving and drinking bowls Both the button shaped blobs and the frieze are of religious origin being employed to ward off evil spirits The application of coloured stones to the vessel surface is also typical of Germanic art and is also a feature of objects worked in gold







46 Two Frankish beakers

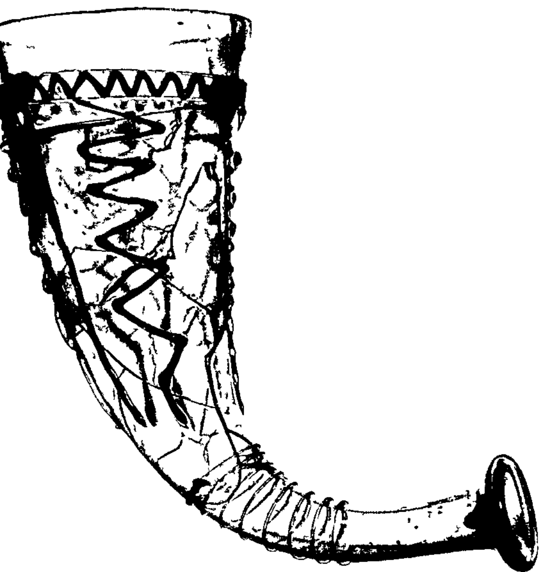
selbecher

Recent research has allotted to the *Russelbecher*, or Claw beaker a more certain place in the history of glass making and the trunk or claw like appendages are now seen as a development of the earlier dolphin motif The glasses still however pose certain problems The symbolic meaning of the dolphin was undoubtedly lost by this time and it is possible that the appendages now represented trunks or more probably horns since in Germanic culture especially in the North, the horn was of religious significance A curious fact which may be mentioned is that glass drinking horns have been found exclusively in the graves of women

Russelbecher have been discovered in the Rhineland, Western Germany and England F Fremersdorf assumes that they were produced in Northern France where a part of the Cologne glass industry had become established during the migration of tribes



ınkıng horn

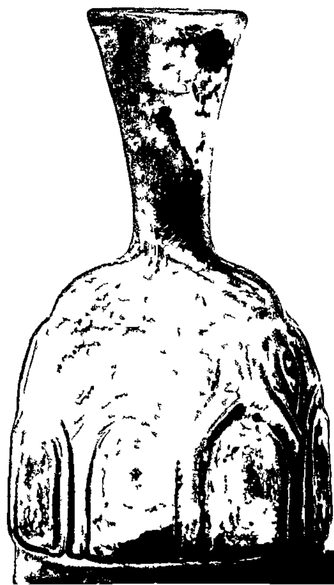




ker

The great period of Rheno Roman glass making comes to an end in the fourth and fifth centuries The centuries of turbulence during the migration of the tribes as well as a diminution of material assets lessened the demands and manifestations of civilisation and glass making of necessity suffered In addition the Church forbade the use of glass vessels for the sacrament The custom of richly furnishing the grave with all kinds of objects died out also under the influence of the Church Thus the art with all its traditions and technical achievements languished The glass of the Merovingian and Frankish periods and of the following centuries of the early Middle Ages is dull imperfect and showing impurity of colour Merovingian glasses show that the art of making a foot for a vessel had been lost and these footless vessels were the obvious solution to the problem In Western Europe with the building of the Romanesque churches and cathedrals the glass maker s efforts are hence forth directed towards producing window glass to be decorated by glass painters and it is left to the Orient to carry on in the old tradition and raise it to new heights in the Islamic lands





50 Footed beaker

51 Mould blown bottle with surface decoration

inged horse

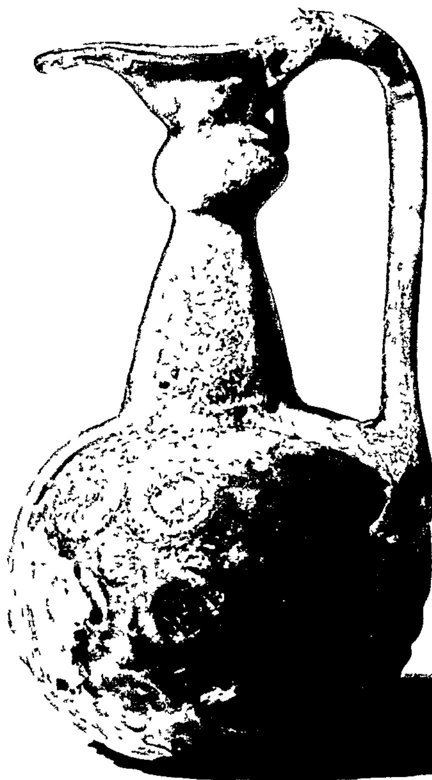
In the year 224 A D the Persian dynasty of the Sassanids succeeded in overthrowing their foreign rulers the Parthians who had dominated the land for five hundred years since the destruction of the Ancient Persian Empire by Alexander the Great The capital of the sultanate was Ktesiphon on the Tigris The renaissance of the old Persian Empire lasted four centuries until it was engulfed by the advancing power of Islam The art of the Sassanian period an aristocratic art dependent on the ancient Persian religion Zoroastrianism is strict in form ornamental and rich in symbolism In comparison with work in precious metal and in bronze glass is only of minor importance Nevertheless although it is hardly formal this beaker may be regarded as far as its ornamentation is concerned as a typical specimen of the period The haphazardly applied medallions depict winged horses which have been obtained by pressing a stamp in the soft metal The glass is said to have been bought from Aleppo dealers and was presented by Wilhelm von Bode to the former Kaiser Friedrich Museum in Berlin



xagonal flask



54 Small ewer with disc decoration





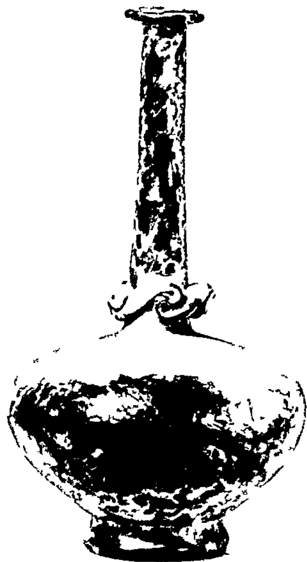
59 Beaker with gold and enamel painting

nall bottle
ustre painting

The Caliphs of the Fatimid dynasty ruled from 810 to 1172 over Syria, Egypt and North Africa from their newly-founded capital city of Cairo This bottle with gold lustre decoration dates back to that period of rule in Egypt Gold lustre was the discovery of Sumerian potters as a substitute for articles of solid gold, which obedient Moslems were not allowed to possess The application of this decoration to glass vessels is particularly effective, since here the glitter of the lustre is linked with that of the glass itself
The vase-shaped glass is decorated at the neck with a calligraphic motif, and the body with a spiral tendril like motif Whereas the Cufic-Arabic inscriptions always have an ornamental function, here the ornament has a calligraphic appearance

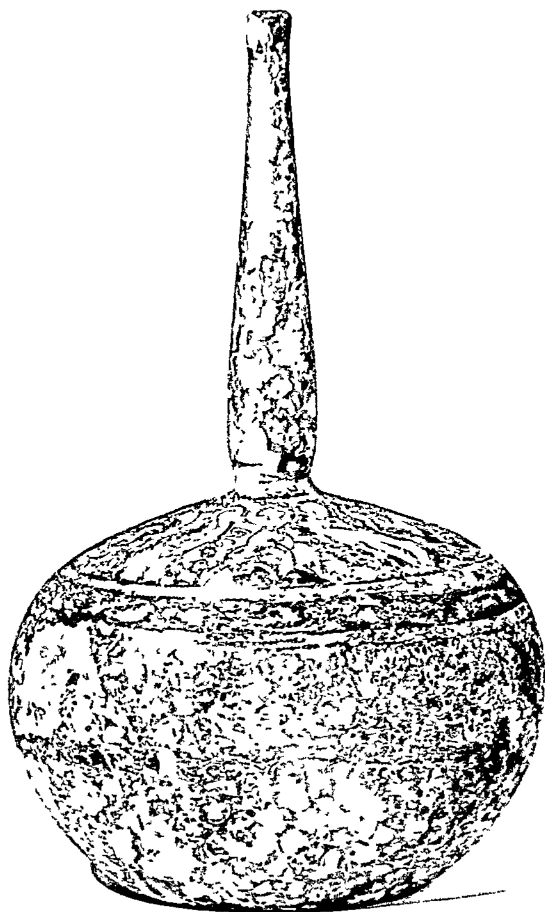


63 Bottle with trailed decoration



rfume sprinkler
n as an *Omom*

The Omom is a Syrian vessel which was used for sprinkling aromatic essences The decorat on of this piece somewhat obscured by corrosive action shows the mingling of Islamic and Ch nese motifs The area between the Caspian Sea and the Persian Gulf was for many cen turies the link between the Near and Far East Chinese influence began to mak itself strongly felt particularly after the Mongol invasion of Mesopotamia and the taking of Baghdad in 1258 Along with the bands of formal foliate pattern we see Chinese flower and animal motifs the peony the dragon and the phoenix



Mosque lamp

Some 230 mosque lamps have survived the centuries Almost all of them originate from mosques in Cairo, although they were not made in Egypt but in Syria Their export to Cairo ceased in 1402 – in the year in which Timur, a descendent of Ghengis Khan, whose powerful Mongolian Empire extended from the Great Wall of China as far as Moscow and Egypt, overcame Syria, took Damascus and deported 150,000 people, including of course all the glass makers, to Samarkand, now the capital of Usbekistan

The mosque lamps are masterpieces of the glass painter's art Rich gold painting is characteristic of Islamic workmanship, since the use of solid pure gold was forbidden on religious grounds The text from the Koran inscribed round the neck compares the lamp with a glittering star and with Allah, the light of the heavens The inscription on the body is in praise of Sultan al Nasir Muhammed, who ruled from 1293 to 1341 The upper inscription is in blue on gold, the lower in gold on blue The blue consists of ground lapis lazuli The foot is ornamented with coloured friezes showing trefoils and Chinese lotus flowers The lamps were suspended from the ceiling on chains The actual oil lamp was placed inside them

Mosque lamps have long been prized collectors' pieces At the end of the nineteenth century many reproductions of them were made, and there are no doubt still many fakes in circulation The glass illustrated here was presented in 1911 to the Kaiser Friedrich Museum, Berlin, by the German Ambassador at St Petersburg



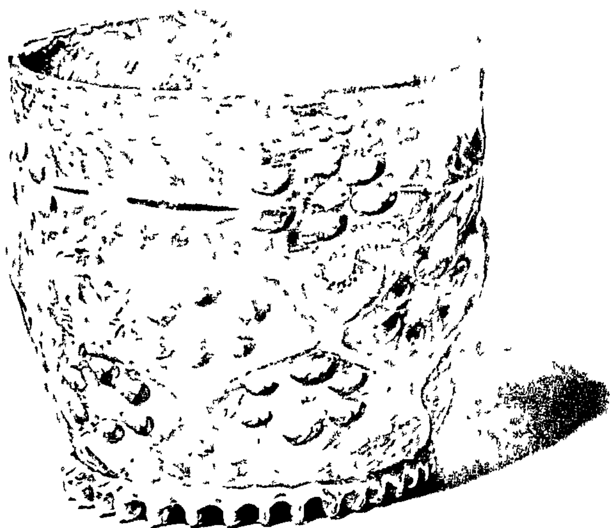
ıker with tracery
ot decoration

The art of making glass as it had developed in ancient civilisations was inherited partly by way of Rome and Byzantium partly via the Near East by Venice which became the centre for the entire European production of new glass In spite of the extraordinary importance of the Venetian glass industry we have very little information about its early beginnings Any attempt to study the derivation of the Venetian style must start with a knowledge of those dates which indicate the city s links with the Orient The destruction of Constantinople in the year 1204 during the fourth crusade brought rich spoils to Venice which had placed its fleet at the disposal of the Crusaders Part of the booty consisted not only of Byzantine and Islamic glassware but also of numerous glassworkers

In the year 1107 Venice established a permanent trading centre in Sidon the ancient Phoenician trading and glass making town and in 1124 another such centre followed in Tyre

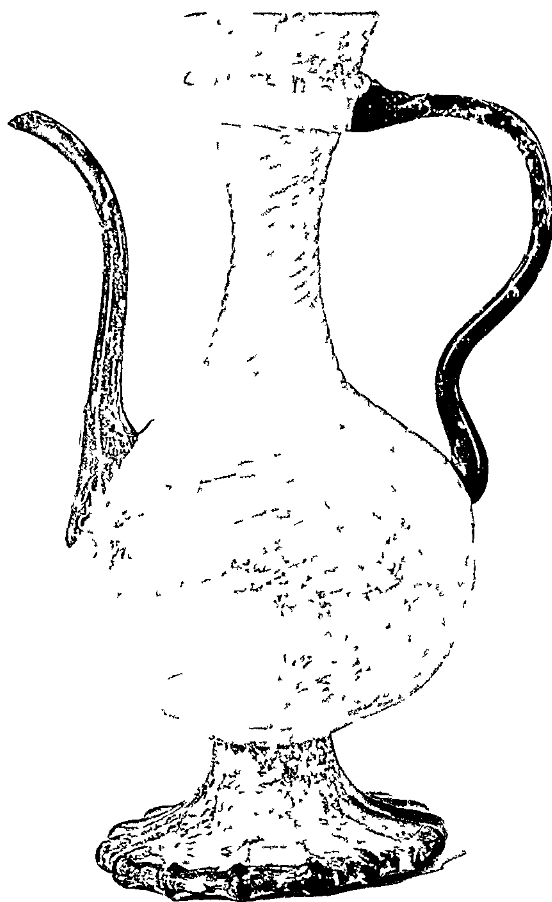
The *Statuti marittimi* of the Doge Reniero Zeno dating from 1235 to 1255 and the treaty between Doge Jacopo Contarini and Bohemund VII ruler of Antioch brought control over the import from the Orient of cullet without which the industry could not function The other necessary ingredients sand and soda were also imported from the East

This close association between Venice and the Near East means that it is often impossible to state with certainty the origin of some fifteenth century glasses To this category belongs the glass illustrated Four such pieces are in existence in the Corning Museum New York the Metropolitan Museum New York the Wolf Collection Buenos Aires and in the Islamic Section of the former Staatliche Museen Berlin All four were found in Syria The rhombic pattern first occurs in the late Roman period on Mediterranean and Rhenish glasses The enamel painted lily of the valley motif which is seen along with the rhombic pattern on late fifteenth century glasses of unquestionably Venetian origin seems to indicate that this vessel was manufactured in Venice for the Syrian market



The ewer is partly iridescent as it was buried for a long time, and this effect strengthens the impression that this must be a Syrian piece of c 500 A D The spiral ribbing and the use of blue glass for the spout and handles could confirm this impression The over all shape of the vessel is nevertheless Venetian and the clear distinction between body and foot is a European characteristic of the Renaissance period None the less, this ewer clearly shows the strong dependence of Venetian glass on its Syrian ancestor Certain features and techniques have been adopted, but the vessel shows a new inspiration

The fact that these early unpainted glasses have survived in such small numbers is easily explained by the fact that they were not like their elaborately ornamented fellows, considered objects of worth and therefore treated with care A fairly large number of ewers similar to this one have survived, but they too are usually enamel painted





68 Bowl with typical Venetian scale-pattern

rriage goblet

Contact with the Near East was the factor which gave to early Venetian glass its beauty during the early period The technique of using enamel decoration was highly developed in Islamic glass making by the thirteenth and fourteenth centuries and was employed by the Venetians, although in a manner reflecting their own contemporary painting, between 1460 and 1530 The Prague Marriage Bowl is an excellent specimen of this period, not so much for the glass as such although the metal and form are attractive, but for the execution of the enamel painting on it

The bowl has a wide foot with a raised rib ornament which has a certain Gothic character about it The bowl is also wide and seems to form the calyx of a flower resting on seven small, leaf like appendages The metal is opaque white in colour The gilt scale decoration is studded with gem like dots of red and blue enamel, and covers the whole surface of the bowl, except where it is interrupted by two medallions The ribs and leaves were once gilt The ornament is formed by the two medallions showing the bridal pair On the side visible in the illustration we see a portrait of a youth playing a lute He wears his hair long, and his clothes are of the latest fashion of the day We are reminded of the self-portrait, executed in a similar delicate manner, of the twenty nine year old Durer, who had visited Venice a year earlier, in 1492 Another marriage bowl is to be seen in the Corning Museum, New York, evidently the work of the same artist The style of the portraits resembles that of the painter Vittore Carpaccio, a pupil of Gentile Bellini





aker with grotesque painting

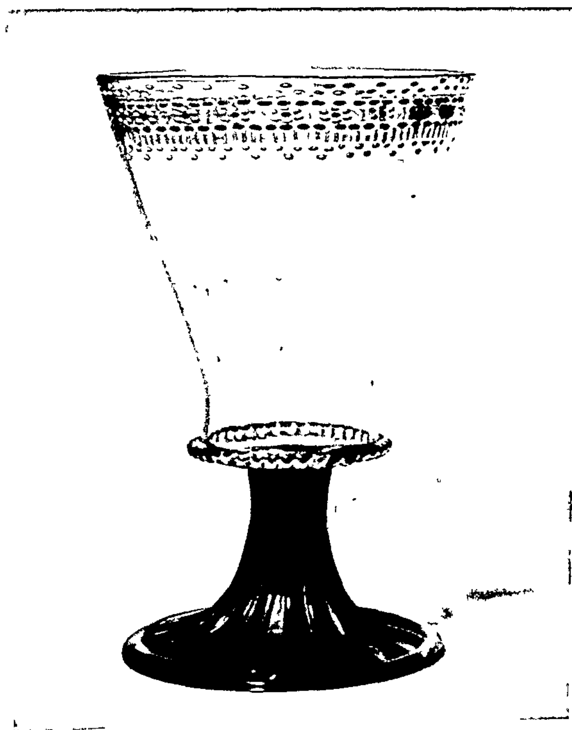
Representational painting on glass vessels was no longer the fashion by the beginning of the sixteenth century Taste inclined more towards clear plain metal Glass was appreciated for its own sake and there was a striving to improve its quality and place the emphasis on beauty of shape

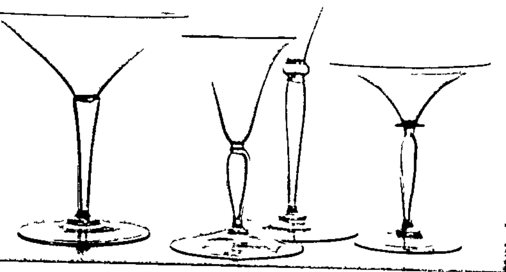
A transitional phase is represented by those glasses which although painted merely have formal patterns not scenes or portraits Such glasses are mainly covered with grotesque ornamentation fantastic lively patterns built up from arabesque like flowers and leaves animal and human like forms such as those which may be seen in the catacombs of Ancient Rome and which were adapted by Raphael in his decoration of the Vatican Loggias This kind of ornament greatly used by Italian French and German engravers was also employed up to the eighteenth century by cabinet makers carpet weavers gold and silversmiths and glass and porcelain makers

The Prague beaker is decorated with winged dragons ridden by putti who hold a gigantic crab Unattached wavy bands fill in the remaining areas and give unity to the design

ed enamel

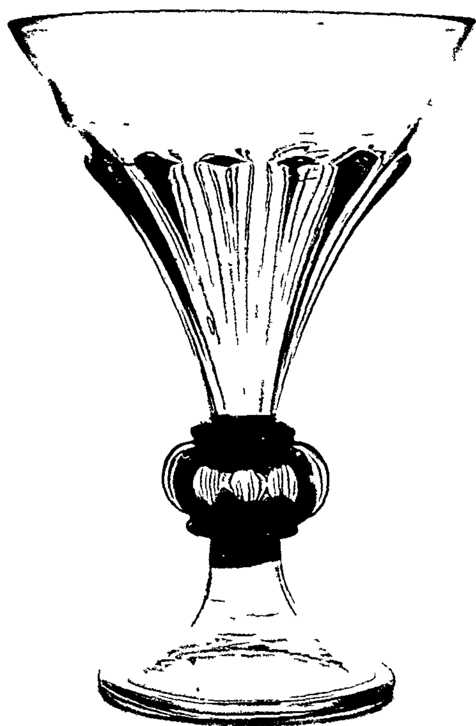
Oriental influence in Venetian glass was limited to the use of enamel painting. As early as the fifteenth century, Venice had developed its own European style Inspiration was derived in part from the metalworker's art The silver goblet in particular was imitated in glass The vertical lines of the Gothic style, and the hard silhouette of metal vessels caused by the nature of the material used, determined the shape which glass pieces took Here we see a stiff, ribbed foot and an austerely shaped cup, which in other examples is also ribbed Only the slight curving of the bowl indicates the later elegance of silhouette which was to develop Colour still plays an indispensable role The foot is of blue glass The bowl which has a border in enamel colour, is of clear metal, but is as yet by no means free of impurities, as was the later famous *cristallo*





ne glass

The wine glass provides an excellent example of the clear elegant lines of the Italian High Renaissance We note a plain, slightly raised foot, a shapely baluster stem and a simple tall or shallow bowl Annular knops mark off the foot, stem and bowl, emphasising the proportions of the glass The metal is still imperfect and bubbled, but its very character, particularly its slight greenish tinge, is an excellent foil for the gold and enamel painting The border consists of a frieze of gold circles and enamel dots



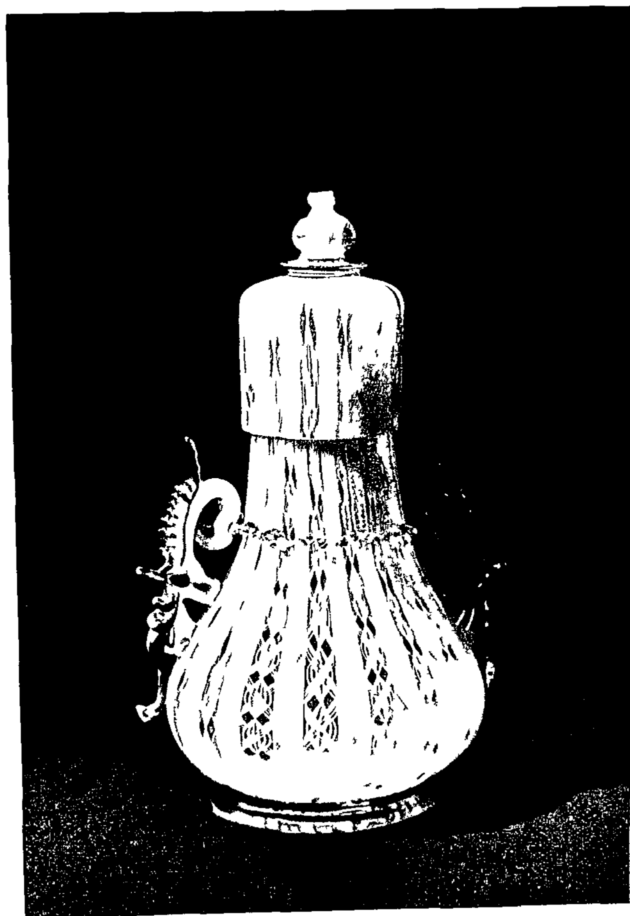
The threat of severe punishment to the families of Venetian glass makers who left the city did not prevent a certain amount of emigration a problem with which the industry was continually grappling Working in glasshouses in many foreign countries the Venetians assured the rapid spread of the techniques and forms familiar to them The term *façon de Venise* is used to describe this glass produced outside Venice The glass in the illustration smoke coloured and in thickish metal with clean strong ribbing was probably made in Germany in the sixteenth century

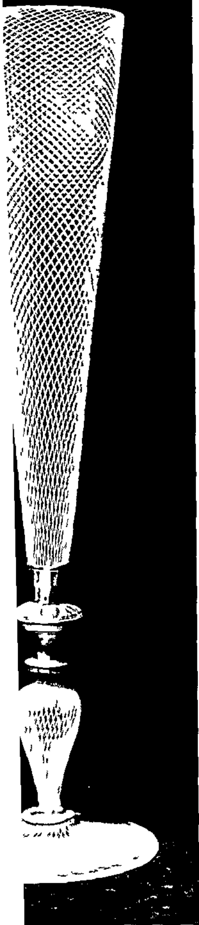


;on with *latticino* decoration

Venetian glass of the classical period of the sixteenth century shows no decoration foreign to the material, no painting, cutting or engraving, its beauty lies in its actual form, in the application of glass ornament at the furnace and, a remarkable innovation, in the patterns within the glass the *vetro di trina* and *vetro a reticelli* Both kinds of glass, which demand a high degree of skill on the part of the glassmaker, have been marvelled at right to the present day

Vetro di trina or *latticinio a retorti* as it is sometimes known, is produced by a complicated process A clay cylinder mould is taken and white glass rods with a colourless casing are arranged with colourless rods in the desired pattern round the inner wall The remaining space in the mould is filled with molten colourless glass The glass is then removed from the mould and drawn out and twisted into a long rod Thus, according to the arrangement of the rods within the mould, a pattern of threads in the new glass rod has been produced Rods of this kind are then used in their turn in a similar process for the decoration of a vessel they are placed on the inner wall of a clay mould into which a glass bubble is then blown The rods adhere and fuse onto the sphere The ends of the rods are then nipped together with a special instrument The bubble is then cased with colourless glass and further blowing and manipulation produce the desired shape The sphere is separated from the pipe the mouth of the vessel widened, handles and foot (prepared in similar manner) applied and the vessel is complete This does, of course, involve extremely quick and skilful manipulation and constant reheating, the glass must always be red hot during manipulation The rods, which were round have become broad and ribbon like in the course of the blowing





77 Flute glass with criss cross *latticino* work

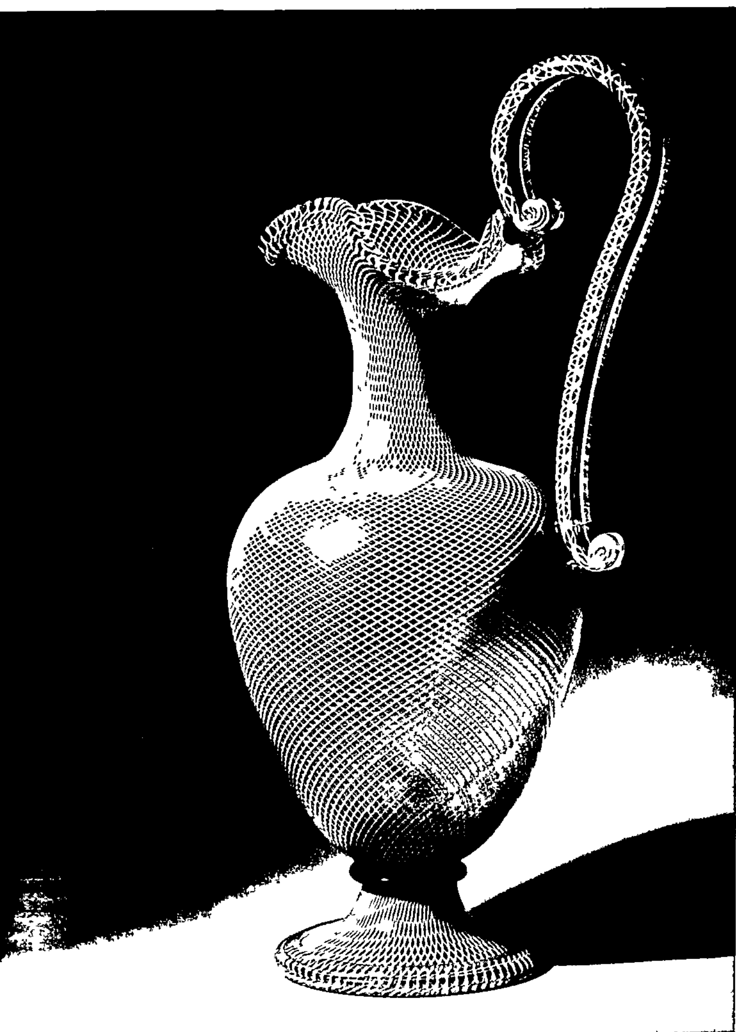
78 Ewer, *latticino* glass

Venetian lace glass or *vetro a reticelli* represents one of the most subtle and intricate developments in the art of glass making Its best period was the end of the sixteenth century when Venice was the leading exponent of another craft lace making Venetian *reticella* lace was much sought after throughout the fashionable world of Europe The lace pattern book compiled by Cesare Vecellio who was related to the painter Titian was printed in sixty editions within the space of thirty five years

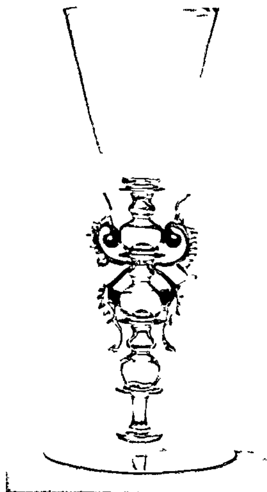
Delicate tasteful elegance is common at this time to both media both lace and glass

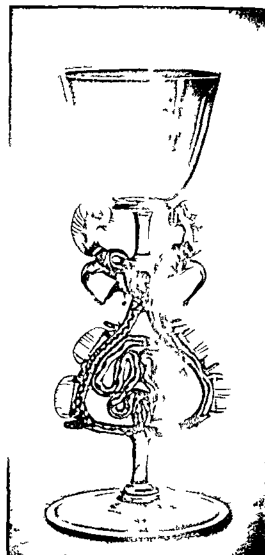
The technique of producing *vetro a reticelli* or *reticella* glass was not so complicated as that involved in the making of *latticino* glass with bands and spirals but it called for a higher degree of skill and accuracy White glass rods placed side by side were melted on to the glass bubble the ends of the rods were then pinched together at the top and at the bottom and the bubble turned so that a spiral band pattern was obtained By sucking air out of the bubble the craftsman collapses one half of it into the other thus producing a double walled vessel with the rods or threads as they now are lying criss cross

Another method of making *reticella* glass was to fuse together two glass bubbles one inside the other, each with their spirals applied in an opposite direction *Reticella* glass continued to be produced in Venice during the seventeenth and eighteenth centuries but glass of this period shows a reduced degree of accuracy









ake-glass in the
le Venise

inged glass in the
le Venise

inged glass in the
le Venise

In the course of the sixteenth century there were considerable variations on the earlier glass shapes The basic wine glass form consisting of foot stem and bowl underwent consider able elaboration After the mid 1500s a form of decoration appeared which is principally responsible for the popular conception of the Venetian glass This decoration concerns the stem which is ornamented with handle or wing like appendages often resembling the seahorse in shape These wings are usually in blue glass upon which a further zig zag trailing of colourless glass is applied

In the seventeenth century the wings took over the function of the stem and evolved into complicated twists of glass snake like in appearance *a serpenti* or in the double headed eagle pattern Such glasses are most frequently of Flemish *façon de Venise* origin

) resemble agate

The terminology for a vessel in this type of glass is somewhat confused Kunckel the German translator of Antonio Neri s treatise on glass making uses the word *Calcedonier* for the original Italian term We gather from Kunckel in his 1744 translation that the glass should be on the outside sky blue sea green red yellow and other streaky colours and like an oriental Calcedonio should have the appearance of jasper and agate and when held against the light should glow red like fire In view of the usual appearance of its mottling the glass is normally referred to today as agate glass Glasses in this metal were produced in Venice from the beginning of the sixteenth century onwards The colourful streaking and shiny surface of the Munich specimen indicate that this is a nineteenth century glass

The production of Calcedonio glass was extensively dealt with in treatises on glass in the Renaissance and Baroque periods This sort of glass is the triumphant product of alchemical experiments

A century after Neri Kunckel criticised the impracticability of the old recipes



aker with Neptune motif

The metal of this vessel has the appearance of an opal glowing bluish white yellowish and even violet according to the light The high relief of the design was produced by mould blowing Neptune is shown rising from the waves in a chariot accompanied by three tritons Eight pieces of this kind are in existence all produced from the same mould The Dresden specimen in the Grunes Gewolbe Museum shows eighteenth century additions namely a foot and cover in silver gilt The glass from the collection of the Elector Augustus the Strong is described in the inventory of the ducal treasury as a large ancient glass beaker with foot on the glass are various raised figures such as sea horses and sirens All these beaker glasses were originally supplied with ball feet after the manner of Nuremberg beakers of the mid 1600s

The production of opaque white opal glass is extensively dealt with in treatises on glass of the Renaissance and of the Baroque period obviously as a result of the importation of Chinese porcelain Anton Neri recommends that if a peach blossom colour is required Piedmontese manganese should be added to the ingredients of the glass Johann Kunckel in his commentary (Ch 57 Vol III) on the first volume of Antonio Neri s treatise gives th s recipe for a fine porcelain glass 60 pounds of sand 40 pounds of potash and 10 pounds of calcined bone or antler ash This glass has the peculiarity of emerging from the furnace clear and light but when heated and worked becomes like opal or bone white or milk white according to how often it is heated and to how much bone or antler ash has been included



uted ewer, *façon de Venise*

A ewer of this type but with a notched foot ring and of certain Venetian origin is shown on Grunewald s Isenheimer Altar , executed in 1515 This specimen from the Moritzburg museum in Halle was as the high conical kick and thickness of the glass indicate probably produced in Germany The beauty of its line which derives from its function must be attributed to the swift skill of the craftsman who with full understanding of the molten metal has deftly twisted the ewer into shape

The wide conical neck shows the Syrian influence which played a large part in the early history of Venetian glass



85 Millefiori tankard

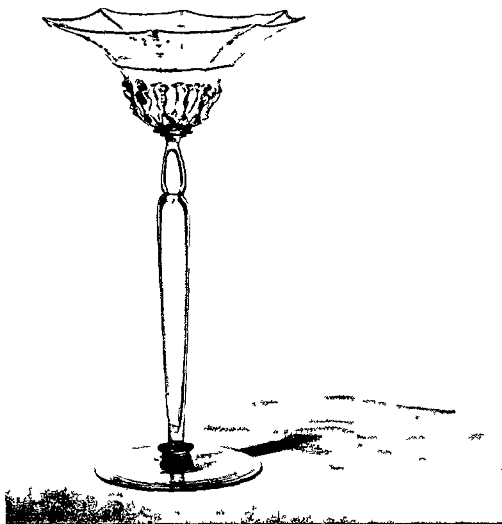


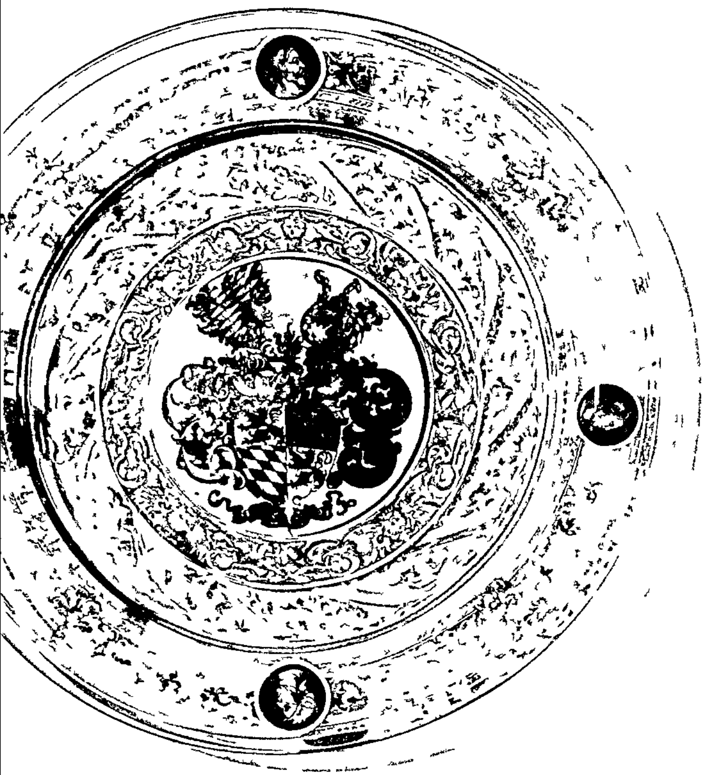
Wine glass with ribbed and ...ed pincered decoration

Towards the end of the classical period of Venetian glass making in the latter part of the sixteenth century pieces of the highest refinement were produced Now the glass is extremely tall and slender appearing almost weightless The properties of the material used have been exploited with great technical skill The glass seems to have been suspended between the ribs of the bowl Gothic characteristics are also once more in evidence

We feel that the craftsman is striving to discover new possibilities for his material no longer in using simplicity of line but Baroque exaggeration and achieving an appearance of unreality by the play of light

This piece is one of the most interesting variations on an inexhaustible theme the Venetian wine glass The glass has been transformed into a delicate flower a late classical development that is far removed from both the severe elegance of the High Renaissance and the lively naturalistic forms of the seventeenth and eighteenth centuries





87 Plate with the arms of Duke Ernst of Bavaria



oblet with cover
outed ewer in the
ian style

The glass house of Hall in the Tyrol was founded in 1534 by Wolfgang Vitl of Augsburg under the protection of Archduke Ferdinand of the Tyrol in whose residence the castle of Ambras many pieces originating from this glass house were kept until they became part of the well known Ambras Collection in the Kunsthistorische Museum in Vienna

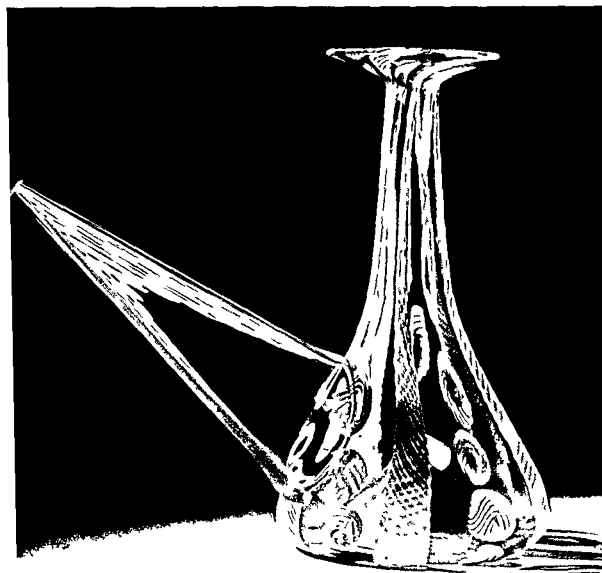
Venetian glass makers worked at Hall in the Tyrol making vessels in *façon de Venise* but heavier in appearance in line with the German interpretation of the Renaissance Typical features are the ornate goblets and tall ewers the diamond engraved *Stangenglaser* and broad bowls The qualities lacking in the imperfect unclear metal are compensated for by the delightful decoration The rich use of diamond engraved Moresque patterns is combined with gold red and blue colours not fired but cold painted which unfortunately means that they have not resisted the forces of decay

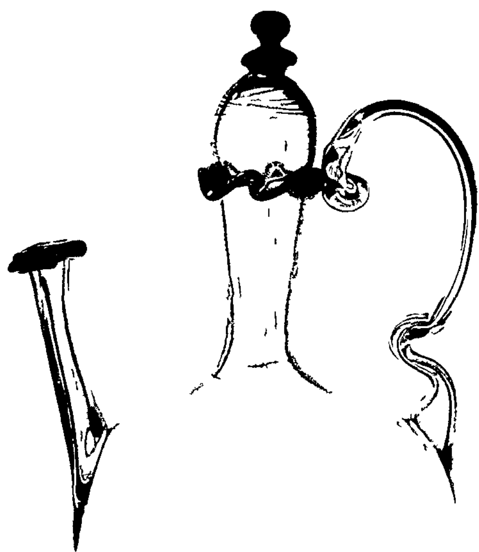


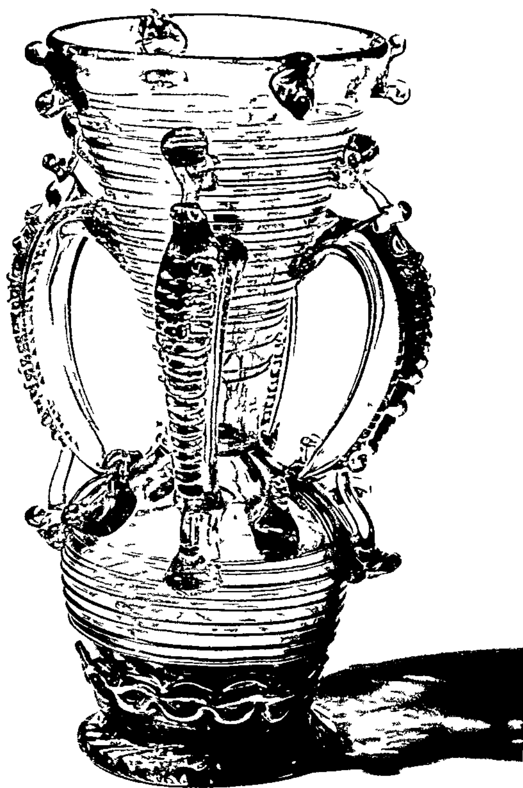
Porrón

Drinking vessel

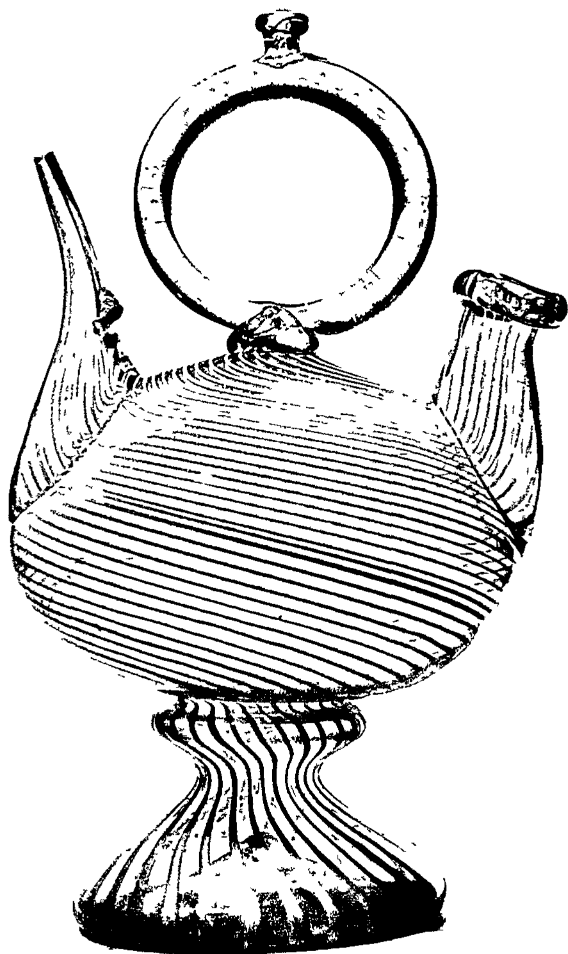
Spanish glass, which from the sixteenth century was subject to Moorish-Islamic influence in the South and to Venetian in the North, can boast of one or two vessels unique to it but which combine both Oriental and European features First and foremost is the *porron*, a drinking vessel derived from the wineskin, and from which the flow of wine is directed into the mouth, the vessel itself not coming into contact with it Secondly there is the *cantaro* a glass bubble with foot, filler, spout and ring shaped handle, again descended from skin vessels Finally we have the *almorratxa*, an extravagantly shaped sprinkler and the numerous beakers and bowls with their imaginative decoration The ornament consists mainly of inlaid threads and trailed appendages

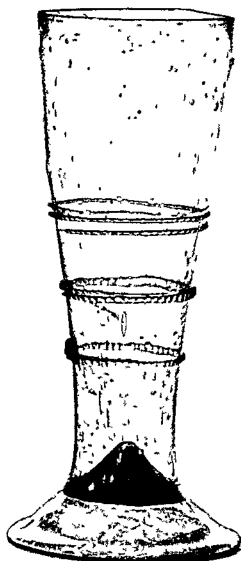




92 *Jarrita*
93 *Cantaro*

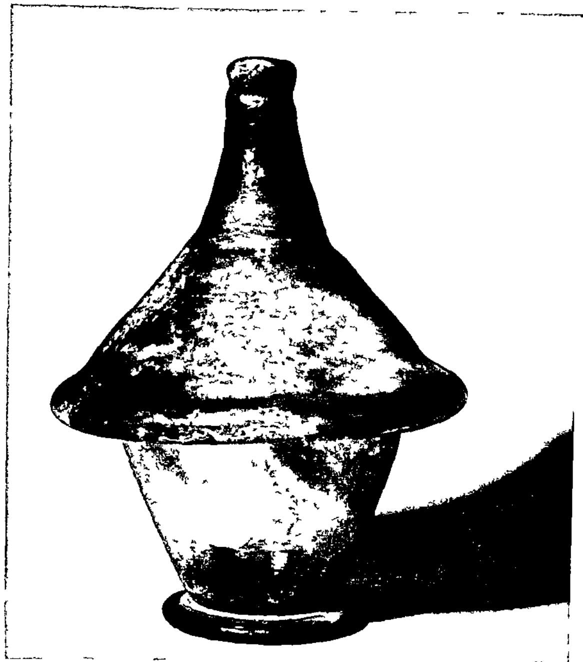




ngenglas

The *Keulenglaser*, which are a club shaped variant of the *Stangenglaser* (q v), were originally common vessels belonging to the ordinary glassware of the late Middle Ages The ring trails have not yet acquired the function of dividing the glass into sections as in the later *Passglaser*, but are merely a simple form of decoration Their varying sizes show that these glasses were not made for passing round a company of drinkers

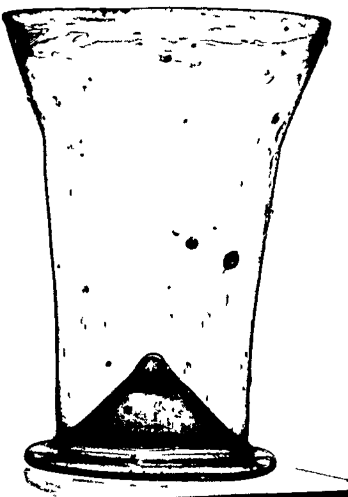
Keulenglaser are often depicted in medieval painting and graphic art A drawing of Albrecht Durer's showing Aesculapius, the Greek god of medicine, reveals to us that it was considered polite to hold them by the edge of the foot Perhaps Durer had observed this custom in Venice, for it was not, as an engraving by Hans Baldung (*Der trunkene Silen*, about 1610) prove, at all general in Germany



ical bottle

This curiously shaped vessel was only produced in Germany The sites of the few specimens found in western parts of Germany and the Rhineland would indicate that they were made in the Spessart area These bottles were current for about a century from 1430 to 1530 Their shape *so clearly Gothic must have been very popular for we see them in many oil paintings* or on copper or wood engravings of the period A wood engraving executed by an unknown artist c 1480 shows one in use as a spirit bottle which is delicately held by the drinker in accordance *with elegant custom* by *the rim of the foot A more usual attitude at the time* would be to hold the bottle by the neck

They were made by reheating a longish glass bubble round the middle and by pressing one half slightly into the other *thus producing a fold and a roof like upper half*



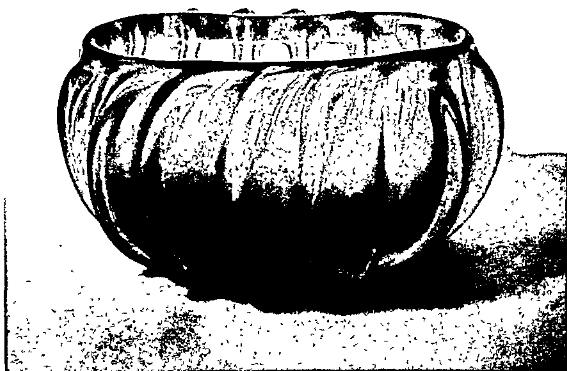


-aker
pouted ewer

aigelein
uppenbecher

The origin of the German term *Maigelein* has not been conclusively explained It is possible that it comes from the word *Magel = Madelen* (Eng Maiden) and was a term used jokingly at first The basic shape of the *Maigelein* is hemispherical and the plain vessel has a high kicked base but there are variations of this such as vessels with vertically or spirally ribbed walls

They were produced by blowing the small soft glass bubble into a ribbed mould By further blowing and simultaneous twisting of the glass then blowing into a second mould still twisting the blowing iron but in the opposite direction a diagonal ribbed pattern is obtained According to the degree of blowing carried out many variations in strength and direction of ribbing are possible







Honey comb moulded glass
Moulded jug

As often as he blows down the pipe – and he must blow often – so often does he press it after quickly removing it from his mouth against his chin so that on drawing breath he does not breathe in the flame He then lifts the pipe high and swings it in a circle round his head to stretch the glass in length or he shapes it by pressing it into an iron mould whence through further heating blowing pressing and stretching it takes on the shape of a beaker a rounded vessel or any other intended form
From Georg Agricola s *De re metallica* Basle 1657



'all *Stangenglas*

The tall *Stangenglas* in the Prague Municipal Museum is the oldest of its kind in existence This glass, both ancient and precious, was discovered with a second bricked into a niche in the wall of a house called 'Zur Steinernen Jungfrau' in the old quarter of Prague This is the first of a series of tall glasses decorated with prunts variously known as *Stangengläser*, *Spechter* and *Passgläser* in Germany where they were popular from the Gothic period down to the Baroque One of the earliest representations of such glass occurs on a painting dating from 1410, executed by a Lubeck artist, and now kept in the Provinzialmuseum Hanover The glass is ornamented with twenty-six rows of small snail like appliques Its slender form reveals its Gothic inspiration as does its somewhat curious elegance

The technique of decorating vessels with large drops of molten glass, or prunts, was certainly popularised in Europe by the importation of similarly ornamented vessels from Syria in the fourteenth century, after the tradition in the West had been broken by the decay of the Rheno-Roman glass industry The earliest glasses showing this kind of decoration have tiny, wart like drops which developed – some first taking on the form of sharp vertical prickles – into wide, flat prunts drawn upwards to a point Simultaneously the shape of the glass was changing The earliest still have the basic Syrian shape, with a sharp division into a cylindrical lower part and a funnel shaped upper part In the fifteenth century the funnel became the rounded lip of the glass, influenced by contemporary stone ware drinking vessels and during the early Renaissance period it is strictly marked off by a circle of glass and is once more funnel shaped
The particular development shown throughout the sixteenth and seventeenth centuries by this part of the vessel in Rhenish glass favoured the rounded shape, culminating in the hemispherical bowl which is typical of the *Romer* and is one of its most important features This type of glass was not intended for everyday use as the fact that they have come down to us as relic holders indicates Throughout the Middle Ages and for a longer period among the lower classes the usual drinking vessel was the bottle In order to drink, one held the bottle in the palm of the hand or grasped it by the foot ring between finger and thumb



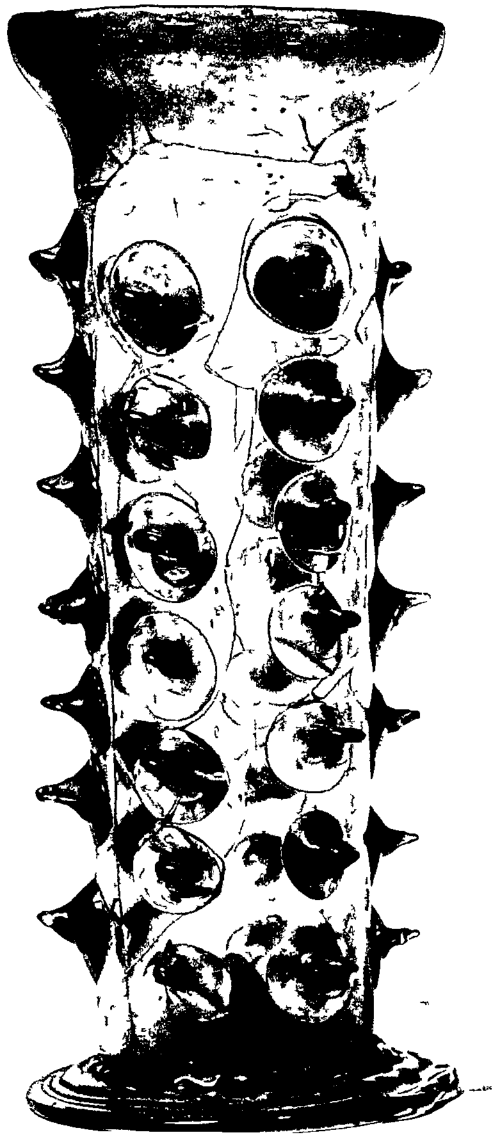
103 *Krautstrunk*



Stangenglas

The changes undergone by the *Stangenglas* between the Gothic and Renaissance periods are illustrated by the Hamburg glass It is wider than the Prague specimen the drops are larger and obviously applied in rows After 1500 the drops become larger once more and lie flatter on the surface of the vessel The bell shaped rim also disappears

The much quoted phrase from the sermon of the Bohemian parson Mathesius which states that the prunts were applied so that the glasses could be easily grasped by the clumsiest people is obviously contradicted by this specimen Here the prunts are a reflection of the late Gothic taste for an exaggeration of form also evident in the architecture sculpture and humbler arts of the period



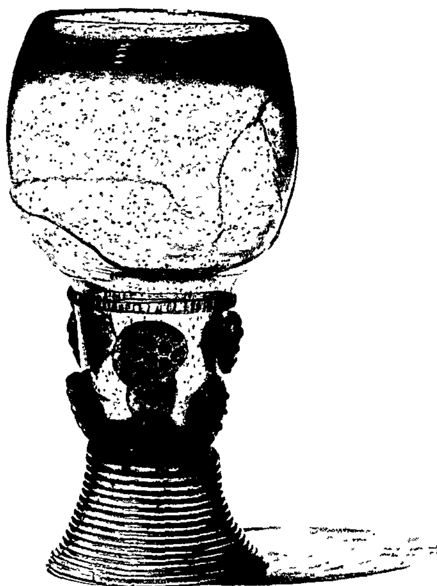
Nuppenbecher with owner's ption

The various hues and the manner in which the light is reflected in the German *Nuppengläser* gives them an entirely different appearance from that of the glass of the Venetian makers The colour green is seen in all its shades, from its palest, most delicate hue to the darkest in the thicker parts of a vessel Qualities so ardently sought after by the Bohemian glass-cutters are here obtained with the more limited methods of the time To produce a glass which glows like some precious stone appears to have been the aim of German glass makers The irregularity of the prunted surface is typical of the 1500 date The gold and silver goblets of the time were no doubt the inspiration for creations in glass, although the latter gradually became valuable in their own right, rivalling articles in precious metal



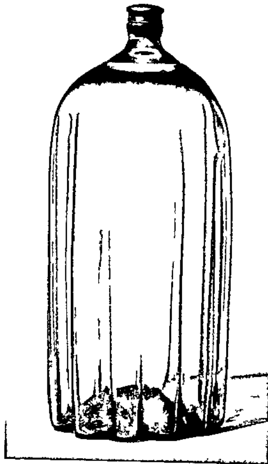
Römer

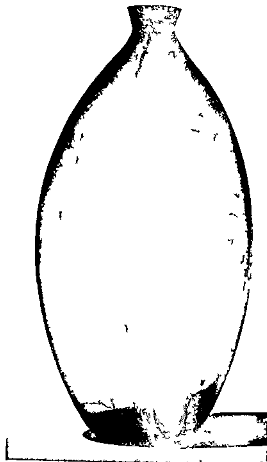
Nuppenbecher







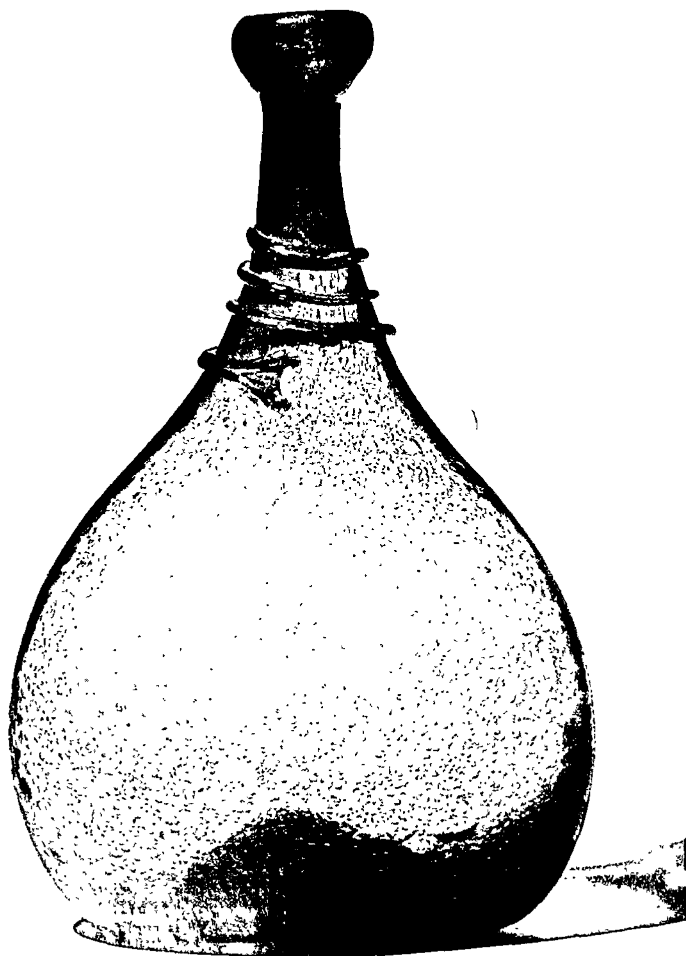


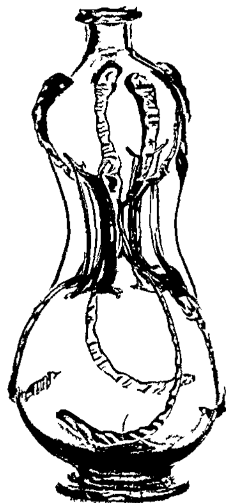


allet shaped
beutelform) bottle
ibbed spirit flask
viform bottle
ottle with spiral trail

Should you desire to make long necked bottles proceed thus after you have blown the hot glass into a large bubble stop the opening of the pipe with your thumb so that the air may not escape then swing the pipe with the glass hanging thereupon over your head as if you wanted to cast it away As soon as the neck is stretched let your hand drop so that the neck is not bent Remove the bottle with damp wood and take it to the annealing chamber

From Theophilus Presbyter *Schedula diversarum artium*





ecanter derived from
ittrolf
ibbed bottle with
d neck

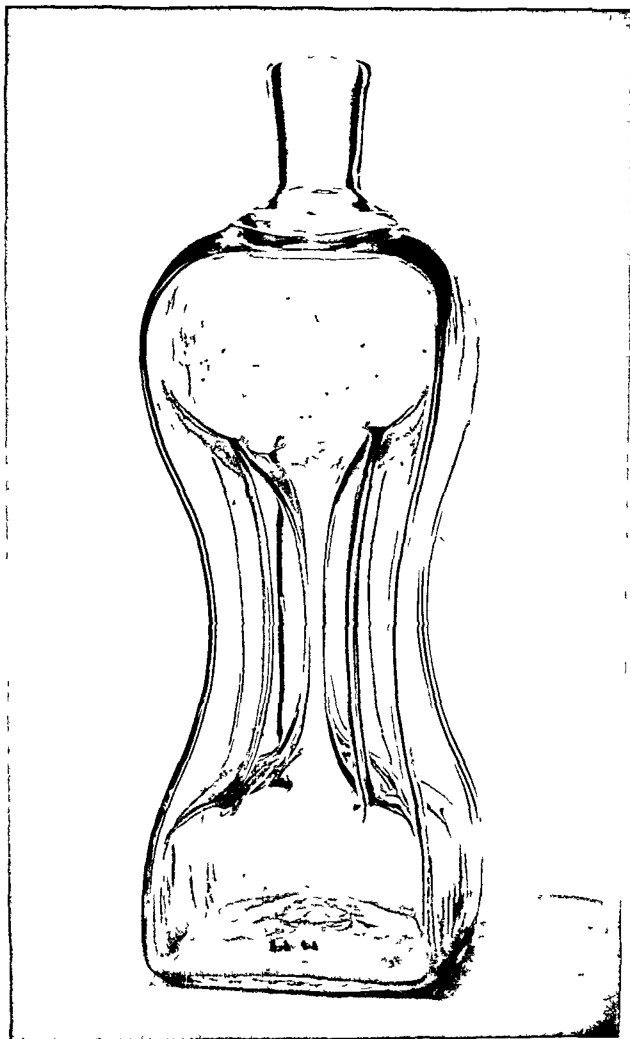
The *Kuttrolf* is often mentioned in medieval literature but we are not given a clear indication as to what this vessel looked like Wolfram von Eschenbach refers in his *Willehalm* to the Gutterel von Glase , in the Spessart Ordinances of 1406 we are told that a glass maker may not make per day more than 200 Kuttrolf or their equivalent This cannot however be a reference to the complicated vessel of which there are many variations still to be seen today One characteristic is to be found in all these vessels they permit liquid to flow only very slowly or even merely to drip from them Indeed the name *Kuttrolf* deriving from the Middle High German *guttern* to drip as well as the other name in use *Angster* from the Latin *angustus* meaning narrow indicate this characteristic The *Kuttrolf* were used mainly as spirit containers they were very popular in the Middle Ages and were often depicted in engravings of that period The complicated form with the triple tubed twisted neck is typical of late fifteenth century taste –in sculpture of the time we note a definite tendency towards twisted forms– but the vessel as a whole is of Syrian and other ancient ancestry The funnel shaped mouth is especially indicative of Near Eastern origin

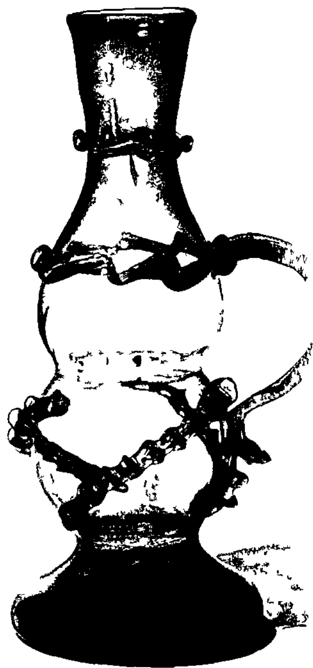


Four tubed *Kuttrolf*

Four sided decanter derived from the *Kuttrolf*







Vine jug

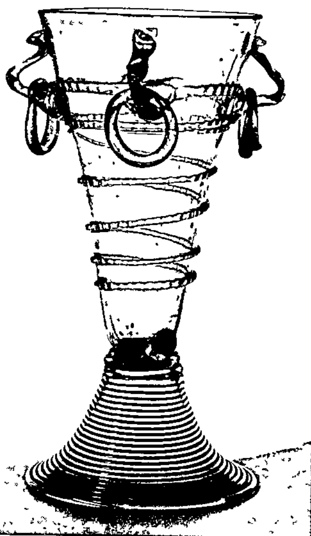
Weil aber das glas von natur weyss und planck ist wenn zu mahl der sandt und d e asche reyn und mit fleyss aussgesotten und abgefeymet ist hat man in diesen landen geme nigklich zum weyn grune gleser gemacht darinn ein rebe rechter plancke weyn sehr schon und lieb lich steht und dem weyn ein lustige farbe gibt

Since however glass is by nature clear and white especially when the sand and ash (potash) are carefully sifted and purified in these countries green wine glasses have usually been produced so that the wine appears quite clear looks appetising and of good colour

Th s quotation from the Bohem an parson Mathesius is evidence of the contemporary love for green wine jugs and glasses The wine jug is similar to the old German *Doppelscheuer* or *Doppelkopf* a trad tional bridal gift consisting of two rounded *Kopfen* (heads)



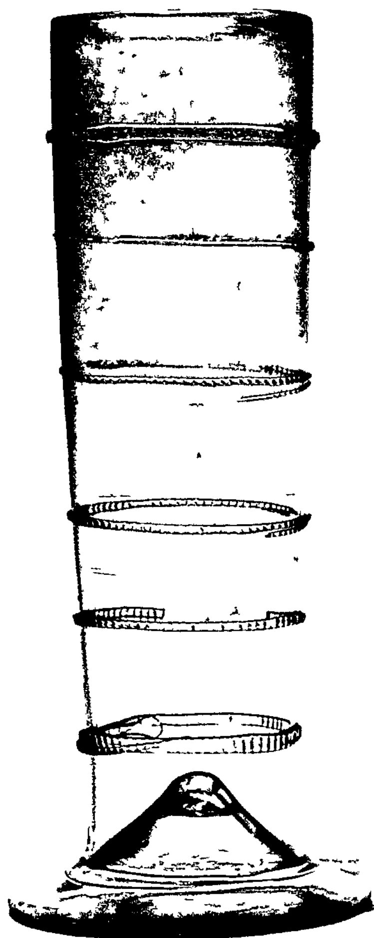
The fascination for the curious and the unusual which is so typical of the folk art of the sixteenth century in Germany brings forth a rich harvest in the medium of glass The glass houses which produced the *Waldglas* (q v) were far from the centres of refined influence and glass making d d not often have its patrons as other arts did with the result that the artist s inventiveness often erred on the side of the grotesque and fantastic Another factor was pride in technical skill which led to a continual search for wittier cleverer creations The *Da tmenbumpen* is an excellent illustration of all these tendencies The insertion of the finger holes is a masterly demonstration of the glassmaker s skill





Ring-glass

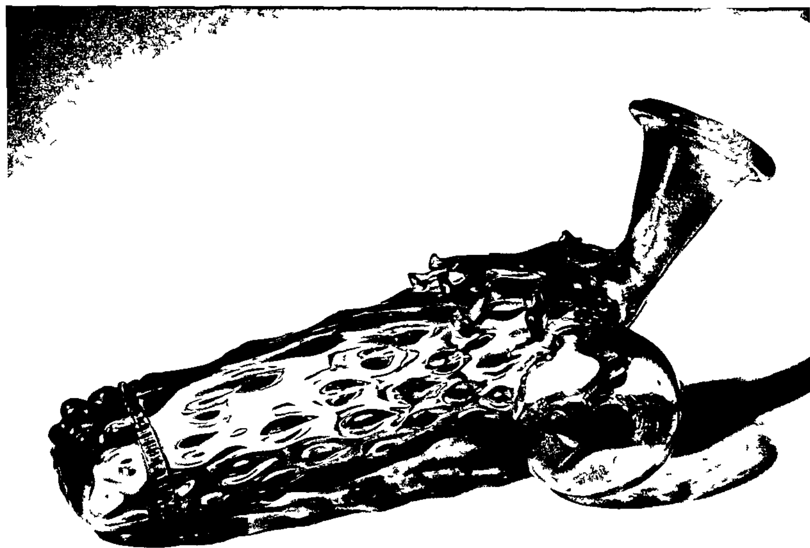
' Aber es hat sich die Kunst endtlich mussen nach dem lande richten, daher man allerley knopff, steyn und ringlein an die gleser gesetzet, damit die gleser etwas fester und besten diger, und von vollen und ungeschickten leuten dest leychter kondten inn feusten behalten werden, daher die starcken, knortzigten, oder knopffischten gleser in brauch kommen sein "
"But the craft had to adapt itself to the nature of the country, so all kinds of knobs, blobs, stones and rings were set on the glasses so that they were more solid and stable, and could be more easily grasped by clumsy people, and thus the strong, gnarled or knotty glasses came into use "
From Johann Mathesius, *Bergpostille oder Sarepta*, Nuremberg, 1587



1 Phallus glass

2 Trick glass in the form a bear

The pliability of molten glass has always called forth the ingenuity of the glassmake tempting him to embark on varied and original creations There is surely no creature r part of the human body which has not been reproduced in glass Virtuosity on the part the maker was of course required if his works were to sell for this was a craft lacking pe manent patronage As a result there was a flood of the most fantastic novelty and tric glasses, the most popular being those which rendered drinking difficult for the poor use Obscenity plays a notable part in this group of glasses Phallus glasses which have the origins in some primitive fertility cult were made in the sixteenth and seventeenth centuri as a form of crude joke





124 The Mainz Dean Chapter Glass

On the huge bowl we see a finely drawn view of the city of Mainz as it appeared in the year 1617 In the foreground flows the Rhine with ships and small craft above the roofs and gables of the citizens houses higher still the church spires and dominating all the Cathedral of St Martin On the reverse is the portrait of St Martin and the arms of the Archbishop In two friezes above and below are the arms and initials of the members of the Cathedral Chapter who may be taken to have been the donors of the glass Beneath the rim we read the inscription Celsitudo atque Nobilitas Florentissimae Metropolitanae Ecclesiae et Civitatis Moguntinae ut es Anno 1617 constitu

This excellent piece of work is certainly that of a Dutch engraver The technique of engraving was practised in Venice but attained its highest expression in Holland in the seventeenth century The white lines of the engraving are particularly effective against the green glass of the bowl




ECCLESIÆ

Armorial *Humpen*

In the second half of the sixteenth century Germany copied from Venice the fashion of decorating drinking glasses with enamel colours Up to this time, glasses with armorial bearings had been commissioned from Venetian glass makers, the German taste for this kind of ornamentation, which advertised the rank of the owner of such vessels, was already well established The coats of arms were gradually replaced by pictures, first of a religious nature, then in many other, usually genre, styles The allegorical representation of Emperor and Empire, the Ages of Man, the Peace of Westphalia, the Apostles, the hunt and views of local interest were most frequent

The bright colours employed had no doubt an exceptional decorative effect, but the execution of the painting was of no particular quality Nevertheless, we would have regretted even more bitterly the destruction of so many examples had the glass been a great work of art for the vessels were made for use during this period when *gross drinken ein Ehr war* (heavy drinking was a point of honor) and many a pretty enamelled glass met its fate during a particularly rowdy session

The best period of enamel painting was the seventeenth century, and its main exponents Germany and Austria The rising popularity of cut and engraved glass in the eighteenth century lessened the demand for enamel decorated pieces, and enamel painting was hence forth carried out only in isolated forest glass houses as a peasant art

It is difficult to attribute enamel painted glass, with the exception of *Ochsenkopf* and *Halloren glas*, to any particular source of manufacture, although certain indications are often given by the style of the borders or floral motifs


HEINRICH·PFALTZ
BEY·RHEIN·



126 *Humpen* of the Magdeburg Cathedral Chapter

127 *Humpen* with equestrian figure of Gustavus Adolphus





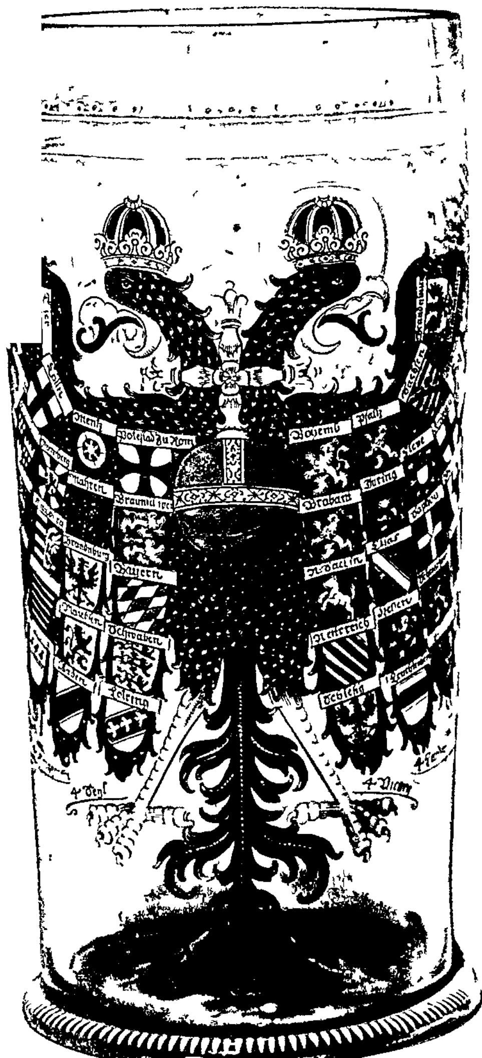


128 *Humpen* with 'Peeping Tom' scene

129 *Humpen* with allegory of the Treaty of Westphalia

Reichsadlerhumpen

Although at first sight the *Reichsadlerhumpen* would appear to be little more than an opportunity for an heraldic jig saw puzzle they are not without their deeper significance as becomes obvious when we consider the period from which they originate the Thirty Years War with its strife and disruption *Das Heilige romische Reich sampt seinen Gliedern* (The Holy Roman Empire and its Member States) is inscribed on the reverse of the glass The main motif is a double headed eagle with fifty coats of arms arranged in groups of four according to the so called Quaternion system This system of no contemporary significance derives from Schedel s *Weltkronik* of 1483



Ochsenkopfglas
Hallorenglas

Another important group of enamel painted glasses are the *Fichtelgebirgsglaser* The glass house in Bischofsgrun was their main centre of manufacture The popular *Ochsenkopfglaser* depict the Ochsenkopf, the second highest mountain in the range, in a symbolic manner as a steep tree covered hill with forest creatures on it and the four rivers which have their sources there, the Main, the Naab the Saale and the Eger, emerging from its foot It is surrounded by a chain fastened with a padlock to secure its riches, which are recounted in a long inscription on the reverse

The *Hallorenglaser* show the procession of the Salters' Guild of Halle on the Saale with the arms and a view of the town These glasses were made for a special occasion the annual Whitsun beer meeting of the Salters





134 Beaker on three feet

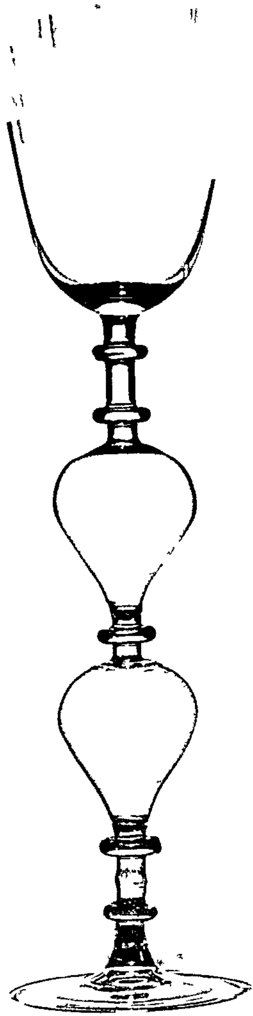
The inspiration for the painting on this glass comes from the engraving by Jacques Callot (1592–1635) of a gypsy procession. Callot's illustrations of Italian life were very popular in the seventeenth and eighteenth centuries. They show a sharp characterisation, often indeed a fantastic caricature, of the figures represented. A certain rough humour is present in his works, which are not, however, lacking in grandeur. Some of his characters were the forerunners of many other figures in European art.

The painting is executed in translucent enamel colours and various strengths of *Schwarzlot*. Johann Schaper, a native of Hamburg but working in Nuremberg from 1640–1670, introduced the *Schwarzlot* technique from Northern Germany and was one of the first to employ it; copper oxide mixed with black enamel pigment is painted onto the surface of the glass and the design then scratched out. *Schwarzlot* painting was a Dutch invention originally used for the decoration of windows. After 1700 it was carried on in Bohemia mainly for glasses with *Laub- und Bandelwerk* and Chinese motifs.





135 Wine glass with pear-knopped stem





Tall bowl, diamond-point
aved

The bowl is one of the earliest examples of English lead crystal glass It probably comes from the London glasshouse of George Ravenscroft who in 1674 took out a patent on his newly discovered lead glass There is remarkable harmony between the vessel s almost modern shape and the heaviness of the metal The diamond engraving is however still in the tradition of the past Only with the introduction of cutting was the beauty of this brilliant thick metal seen at its best The fact that cut lead crystal was an eighteenth century development indicates that the decorative techniques of the English Baroque were much more restrained than the Bohemian and German art of the period and lacked its voluptuousness In the case of this bowl it is the absence of extravagant cutting which gives it its modern appearance

Glass with diamond
engraving

The second half of the sixteenth century saw the establishment of new glass houses in England Some were run by Venetian glass makers and produced glass in the Venetian style The name of Jacopo Verzelini is one that has come down to us This maker was granted the privilege of making Venetian glass by Queen Elizabeth I in 1575 and this glass probably comes from his establishment In clear metal with minute air bubbles the glass has a hollow fluted bulb between two knops a wide flat foot and tall bowl The diamond engraving heraldic in character with parallel arabesques animal forms and inscription is a Venetian invention of the same century The glass may be regarded as a fine example of the Renaissance art of Elizabethan England


DIER

Goblet with portrait of a man

Goblet showing putti drinking

e

The delicate line of the diamond point engraving becomes even more indefinite during the eighteenth century, breaking up into a series of dots, in fact the whole design is picked out in minute dots tapped out with the tip of a diamond One requisite for this technique which is known as stipple engraving was good quality glass and this was found in the English lead crystal glass, then known as flint glass, which was exported to Holland Belgium and France The most important artists in stipple engraving are Franz Greenwood (1680 to 1762) and David Wolff who died at the Hague in 1808 In Holland delightful engravings were pro duced delicate showing skilful use of tone, and in their subtle elegance typical of Dutch and French Rococo painting

Diamond point engraving had spread from Venice to Germany and Holland during the sixteenth century In the first half of the seventeenth a large number of diamond point engravers were active in Holland and particular mention must be made of the Roemer sisters of Amsterdam and W J Heemskerk of Leiden The delicate effect of seventeenth century Dutch engraved glass forms a marked contrast with the heavy green *Waldglas* and its abundant deftly executed engravings

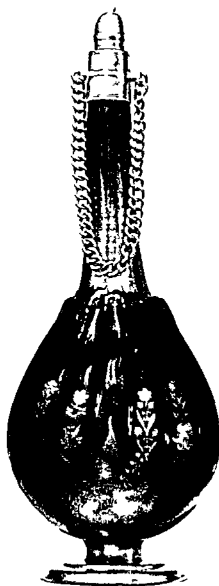




ɔ Bottle with trailed thread decoration

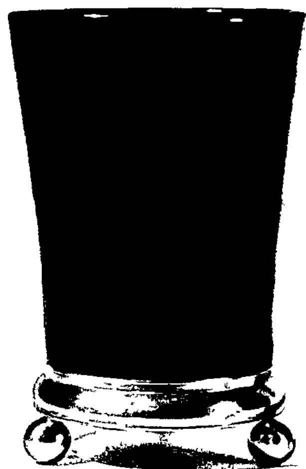


A problem to which both glassmakers and alchemists of the seventeenth century devoted much of their research was the formula for ruby glass They were not so much eager to produce a glass of beautiful colour for its own sake, but shared the belief that drinking from such glass would give protection from all manner of ills In his *Ars Vitraria* of 1679 Johann Kunckel quotes the recipe for ruby glass formulated by Antonio Neri, but adds Ich habe hierinnen uberaus grosse Muhe angewandt und kan auch, Gott Lob, neben dem schonsten Rubin, das feinste Roth machen, weil es mir aber gar viel Zeit, Muh und Arbeit gekostet, und es eine sehr rare Sache ist, als wird mich niemand verdencken, dass ichs vor diesmal nicht gemein mache' I have devoted much time to this subject, and can now, thank Heaven as well as the finest ruby, produce a most excellent red glass, since it has cost me so much time and trouble, and since it is a very rare product, no one will object to my keeping it secret this time Even if he did not succeed in keeping the secret of ruby glass for himself, probably because it had been independently discovered in Southern Germany, he is generally recognised as its inventor The gold used was soon replaced by copper, which gave a still richer shade In the nineteenth century many Bohemian glasses were cased with a thin layer of ruby glass The method of producing the true 'gold ruby glass, which obtains its brilliant colour by being reheated after blowing was rediscovered in the glass house at Cologne Ehrenfelde at the end of the nineteenth century



2 Ruby-glass beaker

3 Large covered goblet



Covered goblet
hollow stem

Caspar Lehmann bequeathed his privilege for glass engraving to his pupil Georg Schwanhardt the Elder, who was born in Nuremberg and who worked with him at the Prague Court In 1622 Schwanhardt returned to his native town where the new technique, so important for the future of glass making, soon became known and spread rapidly
The Nuremberg marriage goblet is made of thin glass which is somewhat impure in colour The stem and finial consist of a series of hollow ball knops and one baluster knop interspersed with discs Bowl and cover form a harmonious whole The decoration -landscape, hunting and genre scenes- is executed in shallow intaglio and covers the entire bowl and cover
A style of representing certain features typical of Nuremberg, such as trees or the human face developed and distinguished this school of engraving from others but rendered the task of identifying the individual Nuremberg artists very difficult The quality of Nuremberg engraving lies in the nuances obtained by the discreet use of polished and unpolished surfaces, and the resulting impression of high relief on a thin walled glass Towards the end of the 7th century it lost ground to its Bohemian-Silesian rival executed on thick walled potash lime glass
The engraving on the goblet illustrated previously held to be the work of Georg Schwanhardt the Elder, is now attributed to the Thuringian engraver IH





Covered goblet with
l decoration

During the first important period of engraving of potash lime glass from the end of the 16th century until about 1725 Bohemia was the main exponent of the art Here we see a goblet with plain foot a baluster stem and a facetted bowl crowned by a heavy cover which is also facetted as is the finial

Around 1700 plant motifs were most favoured these gradually becoming finer in execut on and more formal in design By 1720 scroll work is the usual form of decoration The inspiration for the newly introduced grotesque shapes lies in the copper engraved pattern books of the period of which the *Neue Grotesge i Werk* by Paul Decker Nuremberg 1710 was the most frequently used

In the same decade the Bohemian glass trade was enjoying its hey day Trading compan es for Bohemian glass were to be found the world over and salesmen travelled the length and breadth of Europe One of these Franz Kreib ch from Steinschonau went as far as Russia Sweden and Constantinople Bohemia had at last triumphed over Venice her great rival



ith arms of
gotsch

Potash lime glass was first made in Bohemia in 1680 Kunckel gives its formula as "15 *pounds of sand, 100 pounds of potash, 20 pounds of pure chalk and 10 lot (old German* weight) of pyrolusite (manganese dioxide)" The metal this produced was so clear that even thick-walled vessels still exhibited an uncommon brilliance. This discovery opened the way to the vigorous high relief engraving of the Baroque period

Baroque taste is most evident in the *Hochschnitt* or cameo-relief technique, carried out mainly in *Silesia*

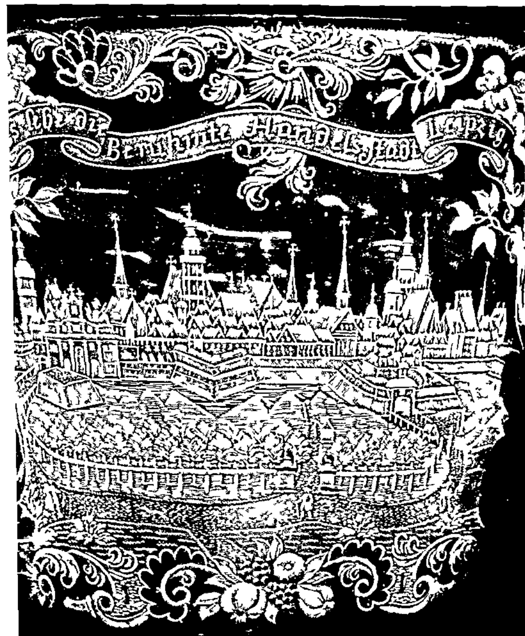
The model upon which engraved glass vessels were based was again work done in rock crystal, but in this case no longer the flatly engraved Renaissance pieces but the bizarre facetted ones of the second half of the seventeenth century

The motifs of the earlier period of this engraving were acanthus leaves and branches, completely covering the surface of the vessel The massive shafts and covers of the goblets are cut geometrically or after motifs from nature The facet-cutting of the wall of the bowl broke up the surface, allowing for a greater exploitation of the metal's light reflecting quality

Covered goblet with view
Leipzig

In the second quarter of the eighteenth century Silesia emerges as the leading exponent in the art of glass engraving Wide decorative borders are typical of Silesian work usually recognisable from the combination of minute strokes and large curly leaf shapes The style of ornament extended into other artistic fields at the time On Silesian glasses it usually encloses small scenes generally the view of some town The shape of the vessel is generally somewhat waisted

In the mid eighteenth century Rococo motifs predominated e g rocaille ornament and decorative panels A large group of Silesian goblets show a combinat on of cameo relief and the more usual *intaglio* work Two palmettes which were execu ted in *Hochschnitt* divide the glass into two areas which enclose scenes or views of towns In some vessels the palm decoration was gilt

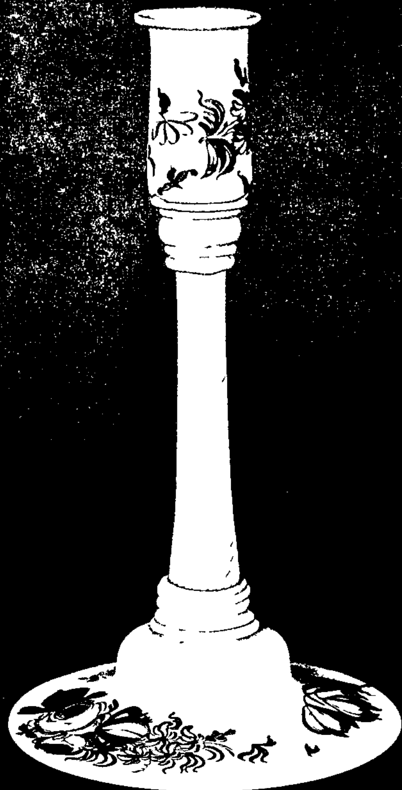


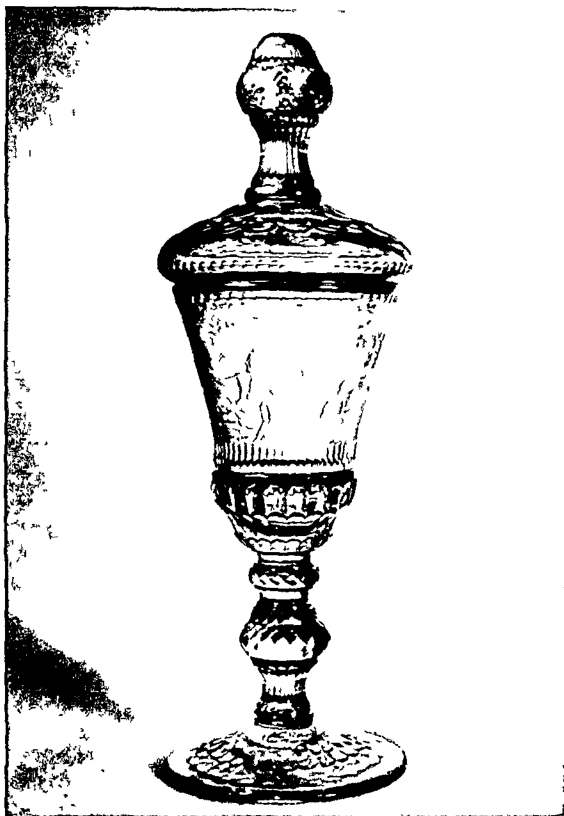


151 Covered goblet
with Venus and Adonis motif

152 Two engraved glasses

Candlestick





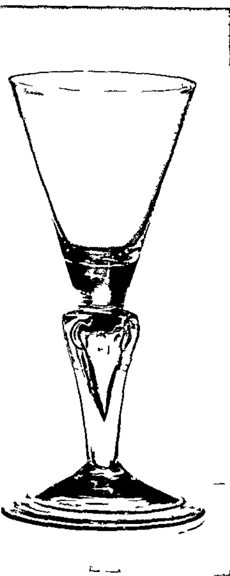
goblet with Neptune

In contrast to Silesian and Bohemian glass this shows mainly scenic decoration or figure compositions usually of mythological inspiration. The area of illustration comprises the entire wall of the glass. Very little of the surface area has been left untouched by the wheel: the foot is heavily cut in a scale pattern, the stem is decorated by shallow relief diamonds, the base of the bowl shows short shallow fluting, whereas the rim is embellished with cut beading. Elias Rossbach was *from 1735 to 1736 Master of the Potsdam glass guild*. Some of his work is signed and his signature has thus become well known.

Wine glass with Silesian stem

Wine glass with gilt
oration

Whereas German glass makers of the eighteenth century expended their finest efforts on special pieces such as commemorative goblets or showpieces for the ducal table or collectors cabinets their English counterparts were already exploring the possibility of producing glass on a commercial scale and of perfecting a selection of fine shapes The existence of a discriminating middle class in England provided a market for table ware which combined function and good taste Consequently however glass engraving never attained the heights reached in Germany and Bohemia





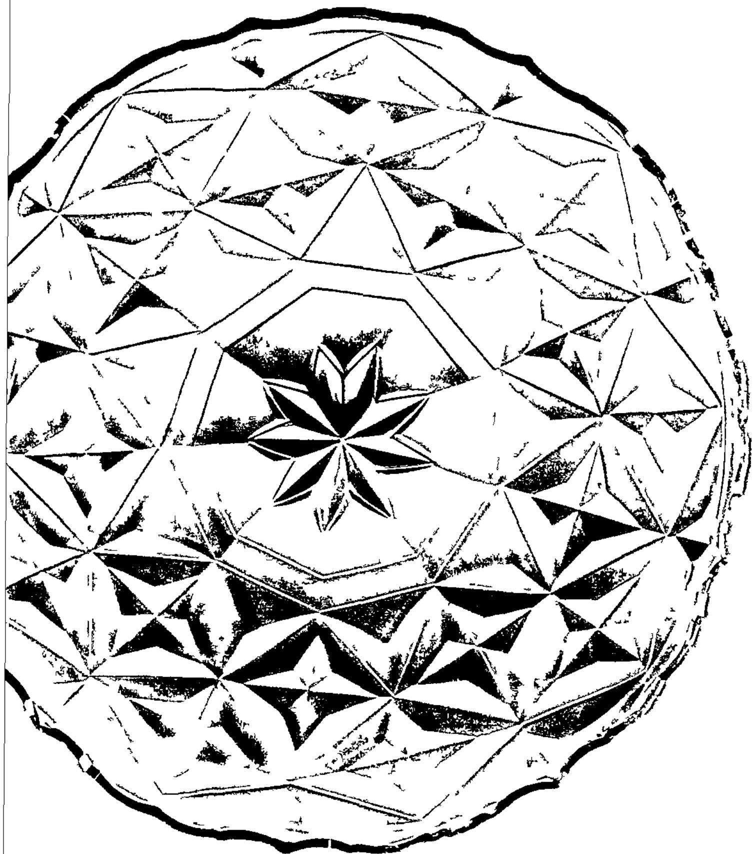


…s with engraved

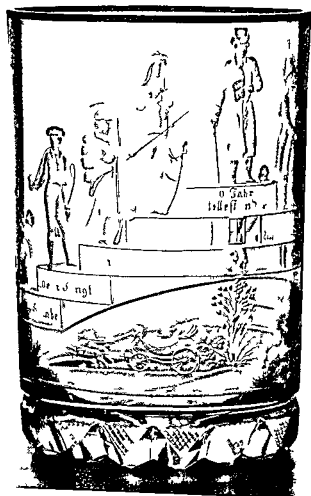
Although some glasshouses had been founded in North America in the seventeenth century, usually by Dutchmen, the eighteenth century sees the setting up of the first important ones, mainly by Germans and Englishmen. To these belong Johann Friedrich Amelung's glass works, established at New Bremen in Maryland. The three dated glasses show that American ware of the period was still European or Anglo-German in style. The glasses have a sturdy form, the metal is pure and clear, and the decoration consists of restrained engraving with foliage and rocaille motifs and finely drawn inscriptions.

Mug with painted decoration





159 Cut glass dish

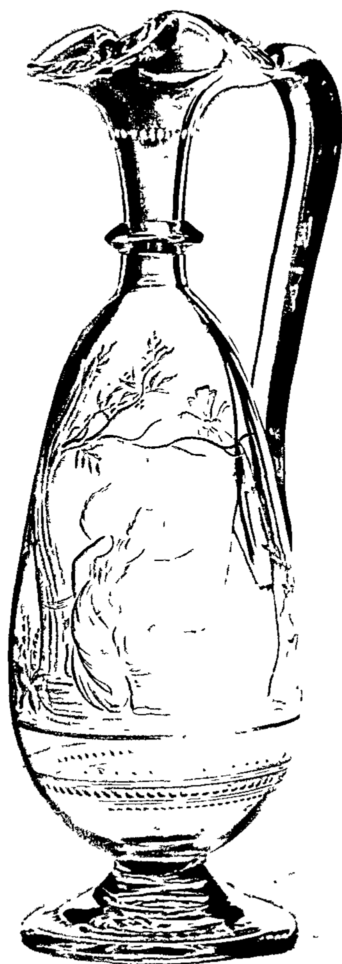




5 Glass showing the ages of man

6 Sweetmeat bowl and cover

7 Pear shaped ewer showing Cupid and Psyche





8 Glass with engraving of Venus

Goblet

France has made only a limited contribution to the history of European glass making In the Middle Ages she had many flourishing makers of *Waldglas* but from the sixteenth century onwards preferred to import Venetian ware Nevertheless one glasshouse is worthy of mention that of Nevers founded in 1581, and it must be added that France was renowned for the manufacture of excellent mirror and window glass
In the eighteenth century English lead crystal was imported and this was sometimes decorated by French engravers The glass illustrated engraved by the Parisian artist Charpentier shows excellent workmanship which reproduces in perfect detail the tiniest flowers and the delicate curls of the goddess who is drawn in her chariot by a pair of swans

In 1777 the tax on glass was doubled in England but this did not apply to Ireland which indeed benefited from it Up to this time Ireland had produced glass for the home market alone but now she was able to conduct a successful international trade The introduction of the higher tax therefore marks the beginning of the rise of the Irish industry which produced work of excellent quality for three quarters of a century The entry of English glass makers and engravers brought about the establishment of more glassworks of which the most important were the Waterford (1783–1851) Belfast (founded 1776) and Waterloo glass works in Cork (1783–1811) Anglo Irish flint glass was at that time as celebrated as Venetian glass had been two centuries earlier
In Ireland as in England more interest was shown in producing high quality table ware than in single show pieces Typical of Irish manufacture are the decanters with three neck rings and mushroom stoppers –the countless pieces which have come down to us often show only the slightest variation in design a factor which makes it difficult to attribute them with certainty to any one glasshouse– wine beer and punch glasses sweetmeat bowls and pickle urns Characteristic designs in the cutting are stars and bands diamonds and lines in various combinations The bodies of the decanter are almost invariably mould blown





blown vessels
bowl and jug

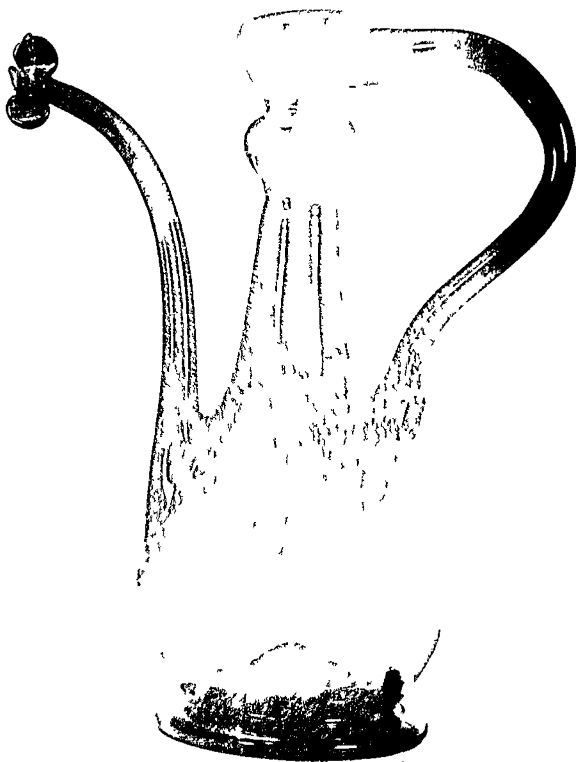
The beginning of the nineteenth century saw the development of a unique and peculiar style in North America The vessels are blown into a mould decorated with applied trails and coloured green or brown rather in the manner of medieval *Waldglas* Typical examples of this style are the moulded ribbed bottles or vessels with a moulded portrait or other decoration possibly merely the name of a firm Medieval German seventeenth century English and eighteenth century Scandinavian glass no doubt influenced this style but of greater importance was the part played by current ideas which were also reflected in the romantic literature of the time The glasses are not without character and originality and are in no way comparable to the late romantic products of the Cologne Ehrenfeld glass works at the end of the nineteenth century These American mould blown relief glasses led directly to the invention of pressed glass



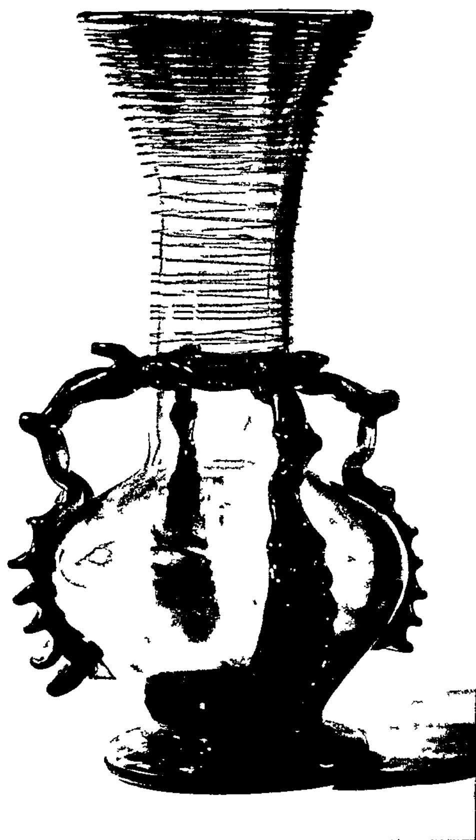
Rosenwasserflasche

There was a renewal of Persian glass making in the eighteenth and nineteenth centuries which had as its centre the town of Shiraz The demand for these exotic typically oriental vessels was so great that it could not be met by Eastern manufacture and the market turned to the Bohemian Thuringian and Spessart glasshouses to make up the quantity The use of pincered trailing and rich threaded decoration was also typical of German workmanship Evidently the Persian article had its influence on German style and in Dexel s *Deutsches Handwerksgerat* we see an illustration of a Spessart bottle showing all the signs of Persian influence As a rule the German products show a metal of higher quality than their Persian counterparts It is interesting to note that Persian glass of this period re introduces a form already two thousand years old the single tubed *Kuttrolf* with the bent neck which had been so popular in late Gothic Germany





173 Ewer



174 Vase in Persian style

75 Bowl

76 Decorated bottle





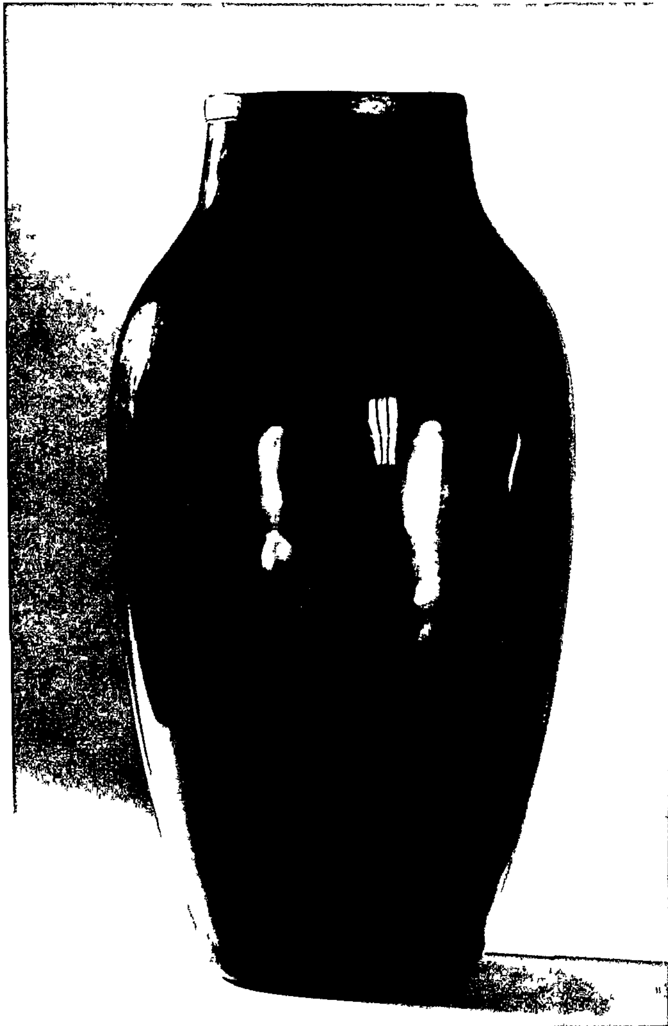




7 Snuff bottle
8 Snuff bottle
9 Tall vase

Just as Ancient Greece knew almost exclusively pottery vessels China too concentrated on stone and porcelain ware Glass could not rival the masterly products in these other materials Although from the third century onwards glass making was carried out here and there –we know for example that a glasshouse was founded near the palace in Peking in 1680– the results were not finely blown clear glass of the Venetian kind nor glittering cut crystal glass but a metal that had little that is characteristic of glass coming nearer to porcelain or other materials in appearance The Chinese glass makers were particularly fond of imitating jade with its milky white colouring and waxy sheen Another type of glass produced was the so called Rice glass with its cloudy speckled effect Chinese glass is mainly moulded and opaque white or coloured Its resemblance to semi precious stone called for the decorative technique of that medium cutting The snuff and perfume bottles which are painted on the inside are uniquely Chinese they are small masterpieces of the craftsman s skill

The snuff bottles of the seventeenth to the nineteenth century are of opaque white or light grey glass cased with a second contrasting glass layer They are then wheel cut releasing a motif in relief on the light background They do not however exhibit fine modelling or delicate use of tones as does for example the Portland Vase



o Vase of cut overlay glass

Emile Galle (1864 to 1904) derived, like many other artists and craftsmen of the late nine-teenth century, much of his inspiration from oriental art Chinese snuff bottles were the pro totypes of his cut cased glasses In early examples of his work the elegant motifs have been produced by cutting away the unwanted areas of overlay with the wheel Later the artist used acid in the first stages for this purpose, finishing the vessel at the wheel The most compli cated processes of ornamentation entailed the fusing on of isolated glass motifs and the inlaying of metal and mother of pearl decoration, which were then enhanced by the cutting away of surrounding areas

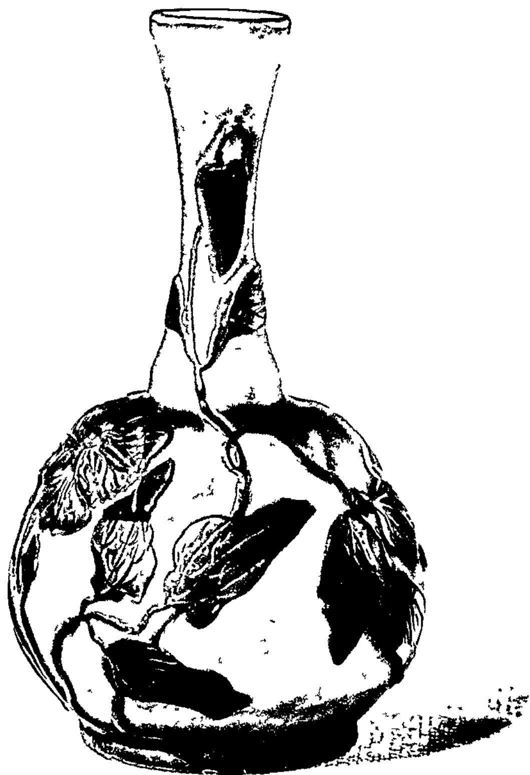
At first strongly oriental in appearance, the ornamentation gradually became typical of the Art Nouveau movement, consisting of sinuous plant motifs designed to harmonise with the general shape of the vessel, which in its turn is influenced by plant forms, so that entirely new lines in the history of the glass vessel are produced The unity of shape and ornamen tation, an Art Nouveau principle still valid for modern artists, is further assisted by the use of colour, mainly subtle dusky shades reminiscent of musk mallow flowers Most of Galle's work is signed

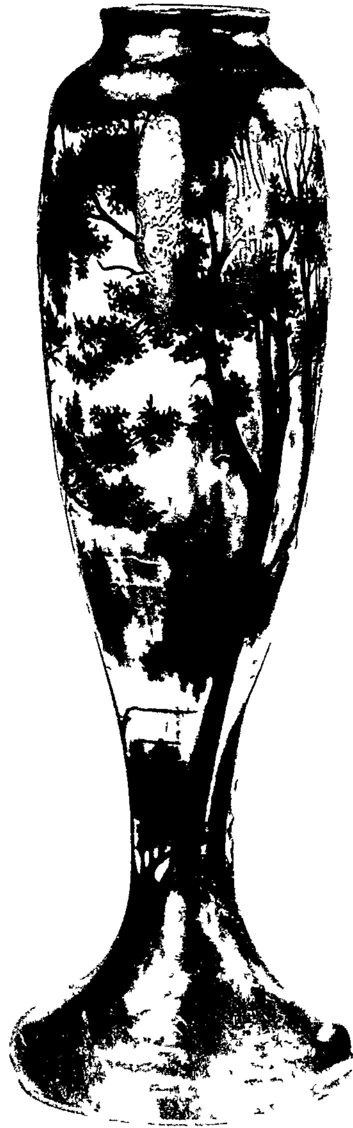
A factory producing pieces very similar to those of Galle was that of the brothers Daum in Nancy, although as well as plant motifs landscapes and figures appear on their work



181 Vase with clematis-flowers

182 Vase of cut overlay glass



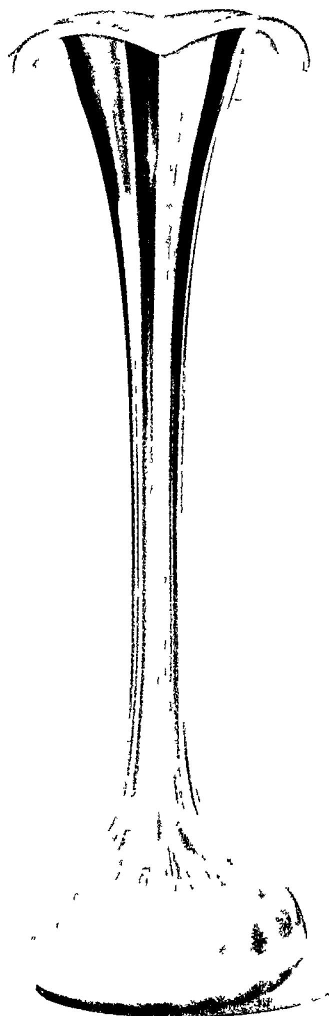


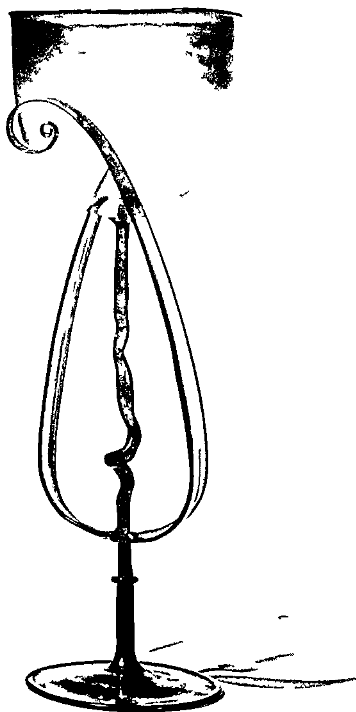
3 Vase with inlaid and trailed ead decoration

4 Onion shaped vase

Louis Comfort Tiffany succeeded in producing glass with a metallic lustre, obtained by the use of metallic compounds and resinous substances Unlike Galle's work his pieces are the product of the glass maker as opposed to the artist decorator They are masterpieces of glass blowing, not of glass cutting Glass threads are laid in the Ancient Egyptian manner on the vessel, then combed with a pencil like tool The pattern of the threads undergoes some changes through repeated heating and reforming, until the blue green and silver violet surface, shimmering like peacocks' feathers or butterflies' wings, is produced The iridescent glow of Tiffany's glass reflects perfectly the *fin de siecle* atmosphere and taste of the Art Nouveau movement Tiffany pieces had their immediate imitators The most important of these was the factory of Joh Lotz Witwe in Klostermuhle in Bohemia



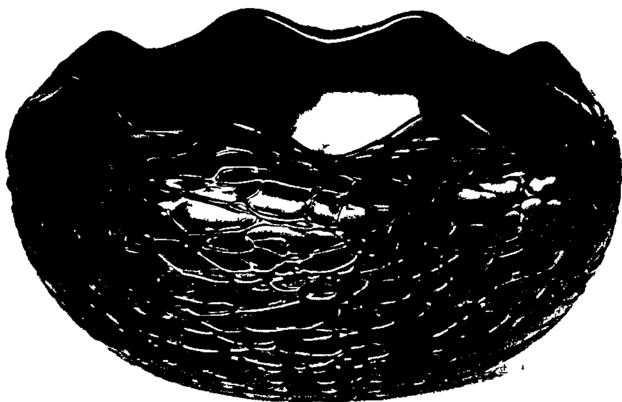




ɔed glass

This glass by the Berlin artist Karl Kopping may be said to epitomise the *Jugendstil*, the German version of the Art Nouveau movement The stem of the glass has become the true stem of a flower, rising gracefully upwards with slender leaves growing from it The glass has been accused of being completely unfunctional, and not without cause, but considered as a decorative piece, as the embodiment of an artistic ideal, it can refute any criticism Kopping also designed functional glasses which with their tall thin stems and small bowls, have their place in the history of glass forms

h inward curving rim



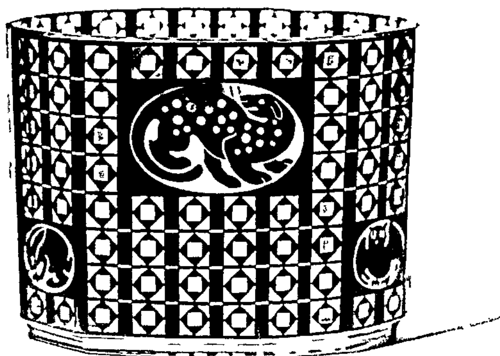


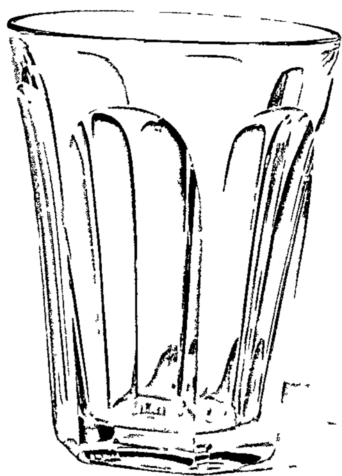
Beaker with *Broncit* decoration

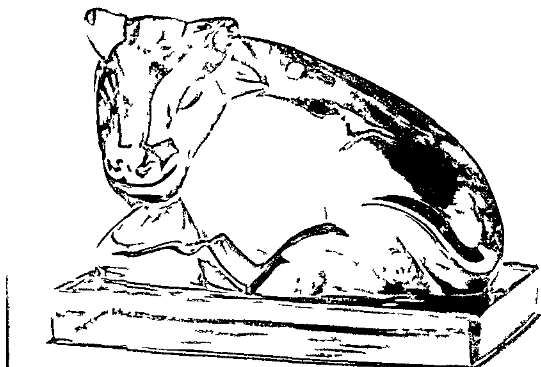
In 1911 Josef Hoffmann founder of the Wiener Werkstätte (Vienna Crafts Centre) in 1903 built the Palais Stoclet in Brussels Of this building Peter Behrens said that everything inside it decor furniture and ornaments were part of a single architectural theme Le Corbusier has praised Hoffmann s works as being the expression of the refined the witty the agreeable and the noble This harmony with architecture is demonstrated by Hoffmann s *broncit decor* glasses

Just as his interiors are based on the contrast of dark constructional parts with light areas of wall so here the blackish brown parts contrast with the transparent or matt areas of glass The strong stylisation of the plants and figures and the geometrical design in which the motifs are placed give the glass a certain cool elegance

188 Bowl with *Broncit* decoration





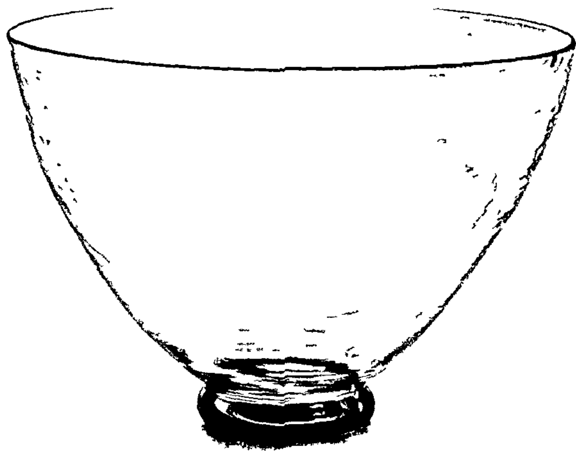


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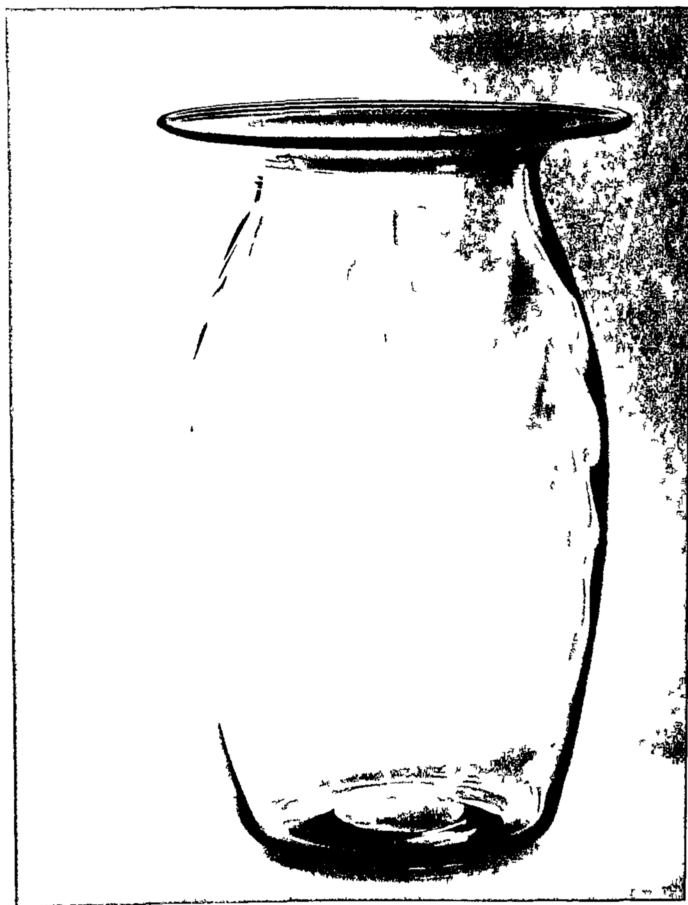
sculpture – hyaloplastic

Baccarat lying in the French department of Meurthe et Moselle to the south east of Lune ville has gained fame for its crystal glass industry The first glasshouse the St Anne House was founded in 1765 In 1816 it was purchased by d Artiques and began to specialise in English style crystal glass In 1822 it became known as the Compagnie des Cristalleries de Baccarat Par s which name it still bears today The first great period of this manufacture came in the fourth and fifth decades of the nineteenth century although Baccarat pieces have at all times borne their own stamp the brilliance of an exquisite metal set off by the elegance of classical form

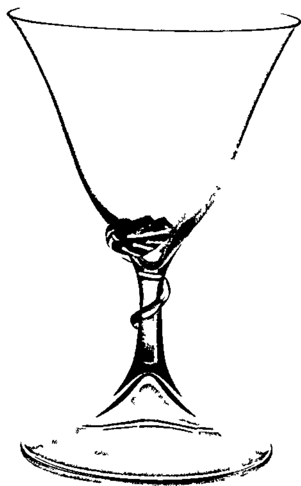
ı Tall bowl



192 Vase







Beaker-shaped vase
Wine glass
Tall bowl with
ing maidens

The Orrefors factory in Smaland Sweden was founded in 1898 No other glass works has had such an influence over glass production throughout the world or done so much to determine an international style The history of Orrefors glass particularly that by Simon Gate and Edvard Hald is representative of that of all glass of recent times In the first three decades of this century attention was mainly centred on the ornamentation of glass by engraving which was carried out with acute awareness of the relationship it must bear to the general character of the glass After 1930 experiments were made with heavy thick glass worked free hand



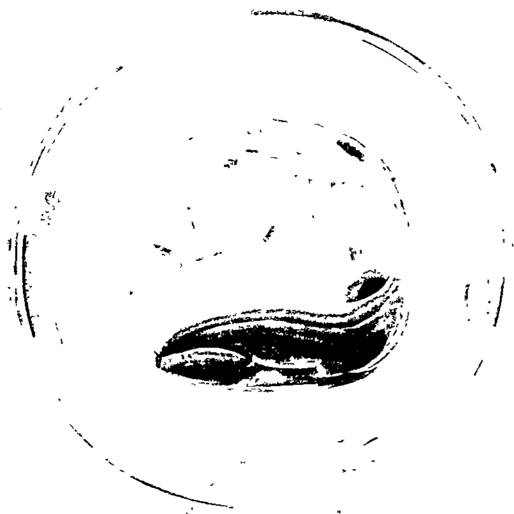
96 Bowl with matt surface

97 Shallow bowl depicting John the Baptist

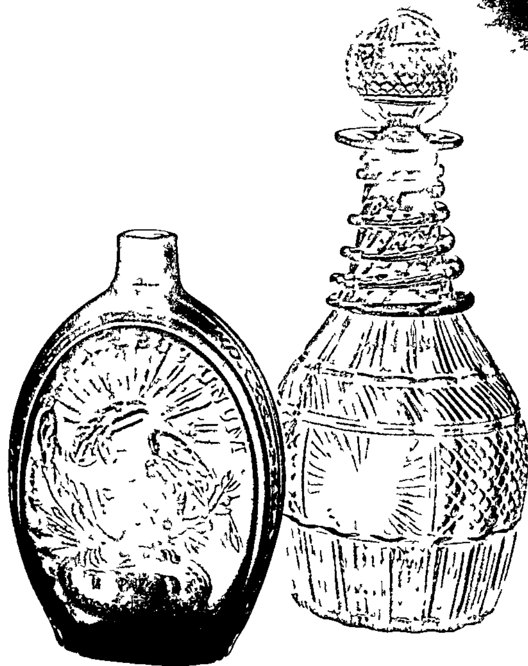
98 Shallow bowl with cut motif





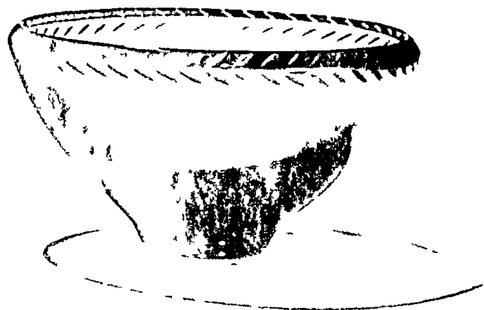


199 Bottle and Decanter, mould blown decanter



Since the reorganisation of the Steuben Glassworks in Corning (New York) in 1933 three factors have governed the work of this establishment high quality metal artistic merit and good craftsmanship and Steuben glass has taken its place among the best in the world The table glass with its good design is in the best lead crystal metal and usually undecorated although glass engraving is carried out One of the most famous pieces of Steuben manufacture engraved decoration is the Merry go Round Bowl offered to Queen Elizabeth II then Princess Elizabeth by President Truman on the occasion of her marriage in 1947

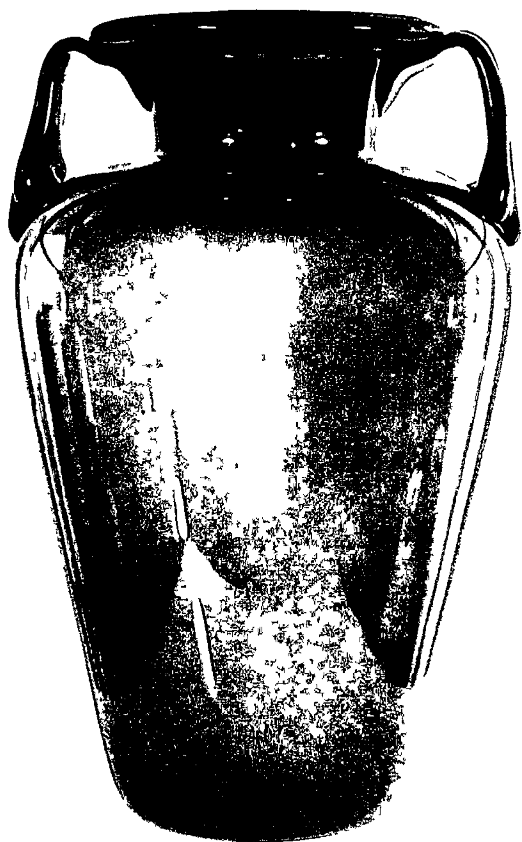




Flower bowl

Urn shaped vase

Wilhelm Wagenfeld born in 1900 is one of the pioneers of modern ideas in factory pro
duced glass He has been graphic artist sculptor and silversmith and took part in th
celebrated *Bauhaus* venture which was at that time centred on Weimar Later he taugh
metal work at the Weimar College of Architecture as well as designing for the glass metal
jewellery and porcelain industries He then became a professor at the Academy of Fine Ar
in Berlin and finally took over the artistic direction of the then *Vereinigte Lausitzer Glas*
werke with the result that their entire production was of the highest quality His persona
ideas on the subject of glass making and this timely opportunity to put them into practice
influenced the products of a whole industry so that not only the art pieces but also the mass
produced articles for everyday use exhibit aesthetic as well as technical quality The enrich
ment obtained by decorative techniques is not however neglected if it is considered to
add to and not detract from these basic qualities

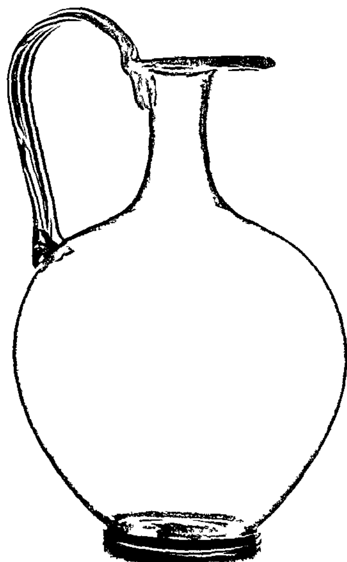


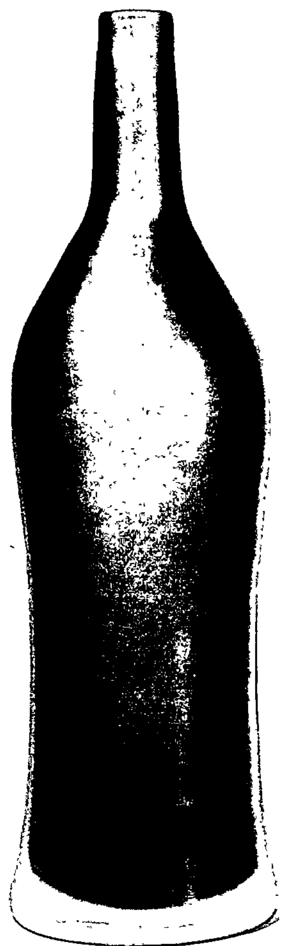
03 Ewer

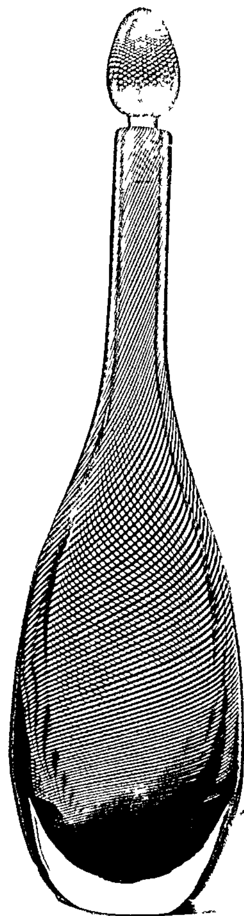
04 Bottle with matt surface

Paolo Venini who died in 1959 was one of the most important artists in glass of recent times The Venini factory founded in 1921, employed at the time of Venini s death more than a hundred glass blowers who were experienced in the ancient and complicated techniques involved It was Venini s aim to marry the Venetian tradition in glass making to modern Italian taste The early pieces still show a strong resemblance to classical Renaissance forms

In his modern *latticino* and mosaic glass, there is always an exciting silhouette a brilliant colour scheme and an interesting surface structure Paolo Venini has succeded in restoring to Murano glass the aristocratic charm and witty elegance it had in its classical period





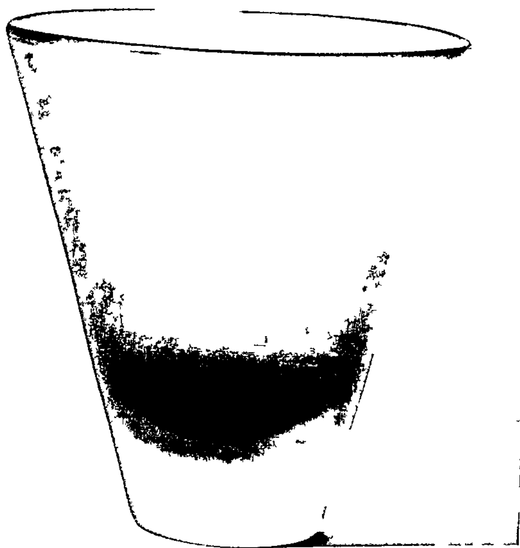


205 Flask in the *filigrana* technique
206 *Fazzoletto* bowl in the *sanfirico* technique



Multi coloured vase

Shouldered bottle with matt surface

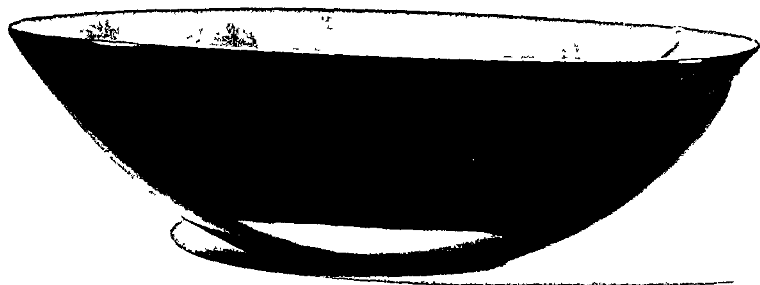


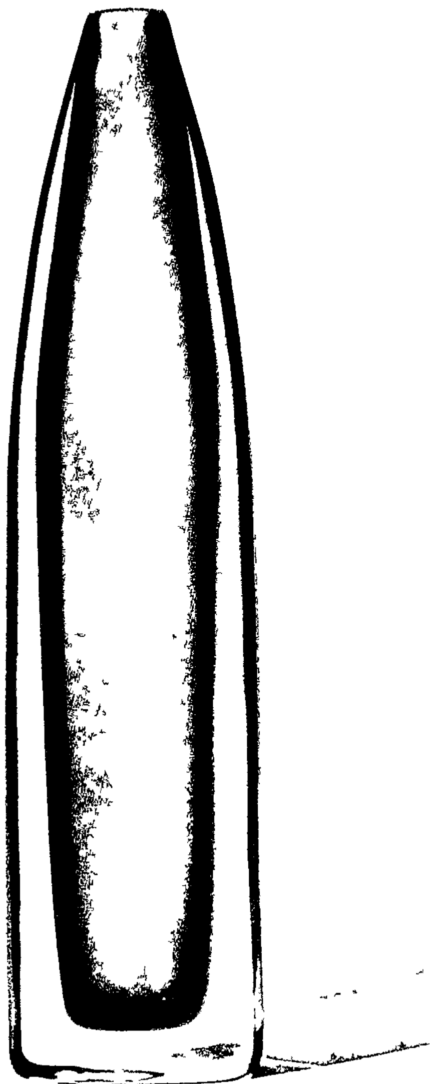


Large bowl

Four-coloured vase

Since 1934 the chief designer for the Seguso factory in Murano has been Flavio Poli. His glasses are simple and clear – a direct result of the technique of blowing – and yet full of careful harmony and balance. In the cased glasses the lines of the vessel bear an important relationship to the brilliantly contrasting colours, producing a tense, exciting effect. Here glass is not treated like a semi-precious stone, but is exploited for its own powers of expression, and with its unique and very modern colouring is certainly a worthy rival to any material.





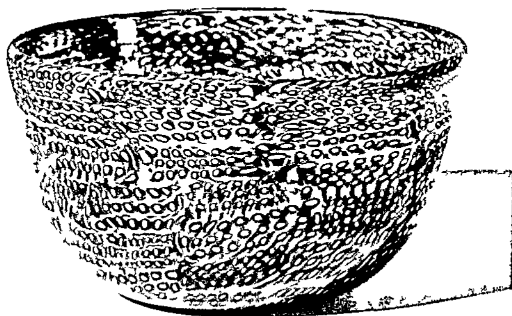


bottle of speckled glass

in mosaic glass

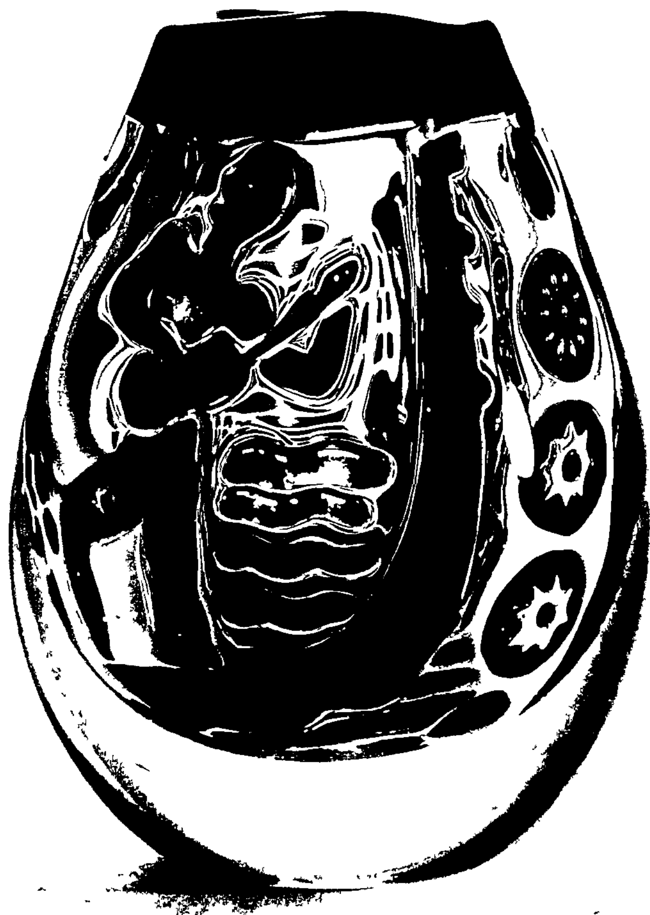
Flavio Poli s credo simplicity of form but variety of colour and material applies not only to the Muranese artist nor to the medium of glass alone but to all contemporary art work *and also to the field of architecture*

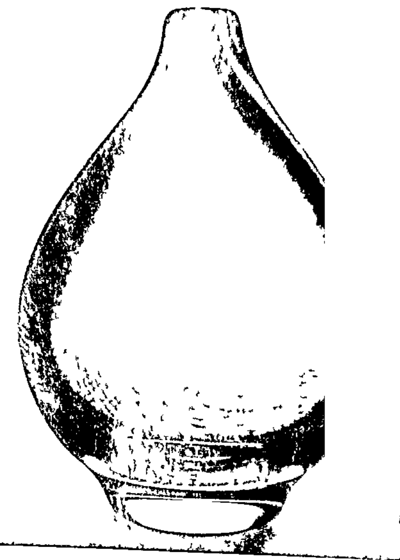
Many of the modern pieces illustrated here demonstrate this fact However clear and simple the overall shape the actual metal is used in many different ways to produce very varied effects often one of great richness One method of rendering the material interesting is to give the vessel a new dimension through colour or texture The spirit in which millefiori or mosaic techniques air bubbles in Ariel glass or flashing and casing are used corresponds to that on which decorative methods in present day ceramics textiles and metal work are applied



Vase with
ubble decoration

The most important achievements of Orrefors glass are Ariel glass Gral glass and Ravenna glass The unique character of Ariel glass is obtained by manipulating air bubbles within the mass of glass Air bubbles may be introduced into the soft glass by sticking a pointed tool into it then sealing them in by smoothing over the surface On reheating the air bubble becomes round but may be guided into many shapes even into figurative representations The fore most exponent of these techniques is Edvin Ohrstrom



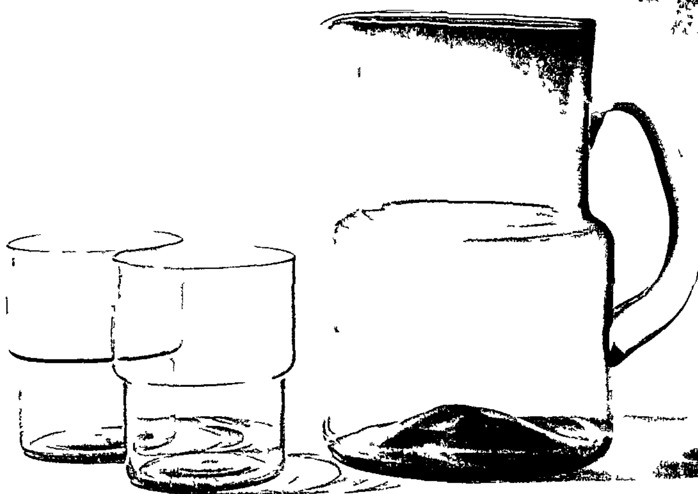




16 Slender vase



217 Water set

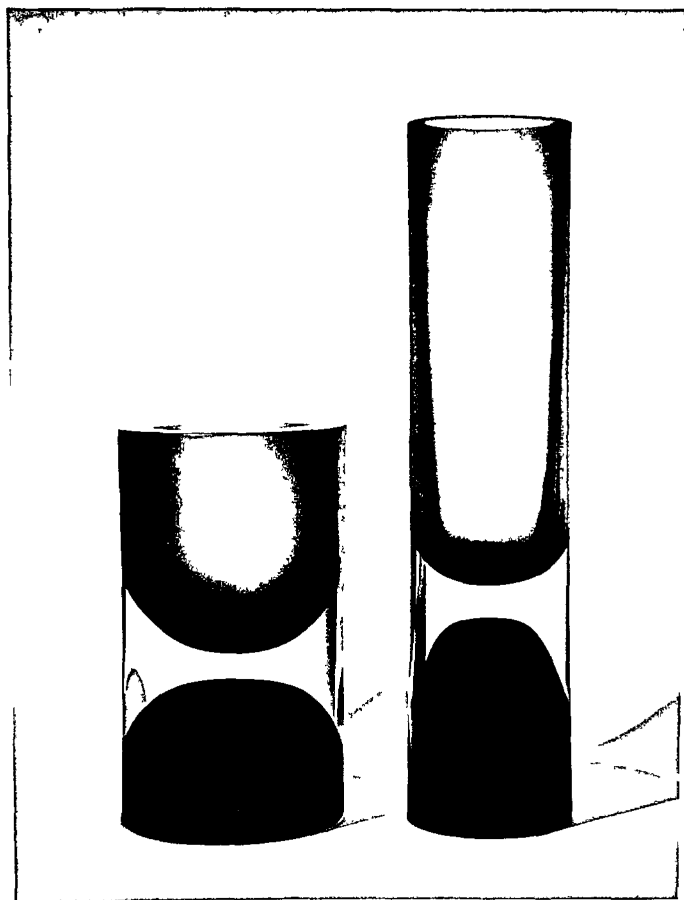




8 Bottle

9 Two cylindrical vases

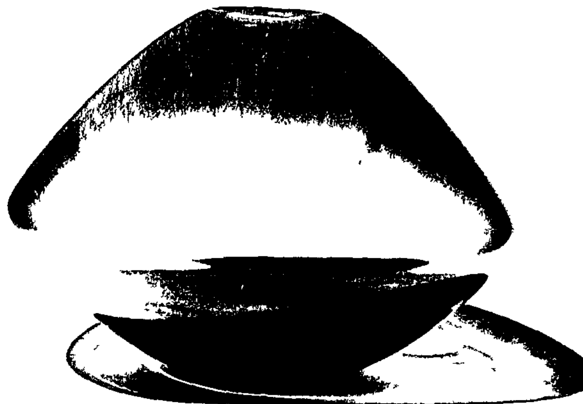
Finnish glass has also played its part in influencing international style The most importan Finnish designers are Tapio Virkkara Kaj Franck Timo Sarpaneva and Saara Hopea Th Finnish glass industry aims at producing not individual art pieces but everyday ware o artistic value In its simple lines and appealing decor Finnish glass shows a close resemblanc to other Scandinavian work particularly Swedish In its considerable use of round shapes i is closer to the Danish in spirit The most important manufacturers are Iittala and Notsjo

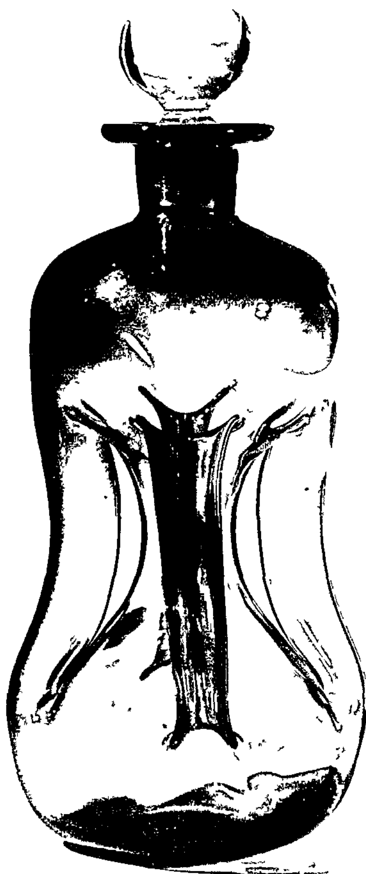


›20 Vase

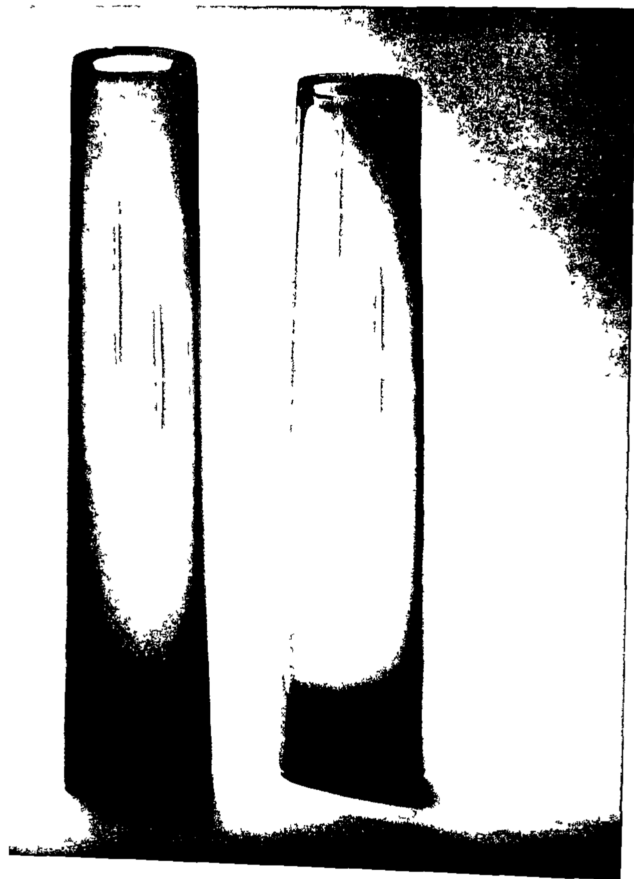
›21 Brandy bottle
n the style of a *Kuttrolf*

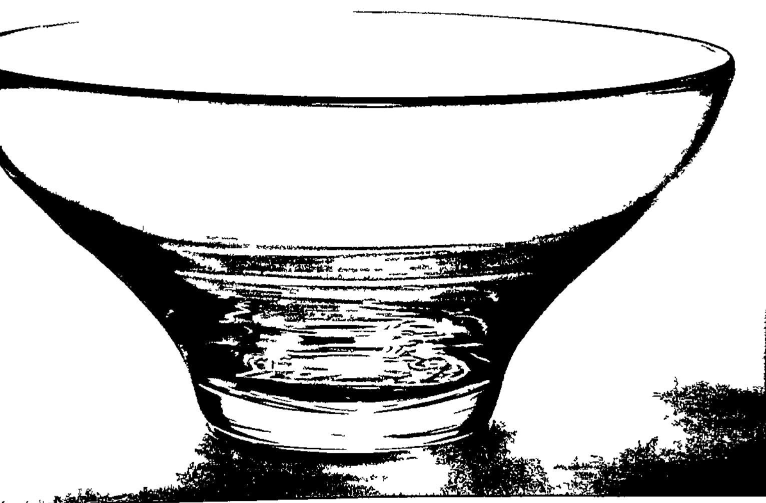
Although Danish glass is strongly influenced by Swedish it does have characteristics of its own Fuller, round shapes predominate and give it whilst depriving it of none of its modernity, a jollier, warmer appearance The decanter, based on the medieval *Kuttrolf* is typical of its homelier elegance The most important factories are Holmegaards Glasværk at Holmegaard and Copenhagen and Kastrup Glasværk in Copenhagen





2 Two cylindrical vases





4 Dish

The main glass manufacture in Holland is the Koninklije Nederlandsche Glasfabriek at Leerdam founded in 1765 and reorganised in 1915 The artistic director is Adrian Dirk Copier who together with the designers Floris Meydan and Willem Heesen has given Dutch glass after a century of little significance a new lease of life and a unique Dutch style about it Its forms are heavier and sturdier than those of Scandinavian or Italian glass



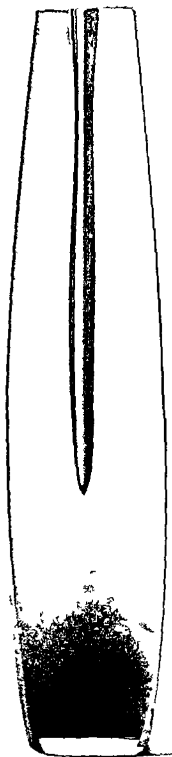


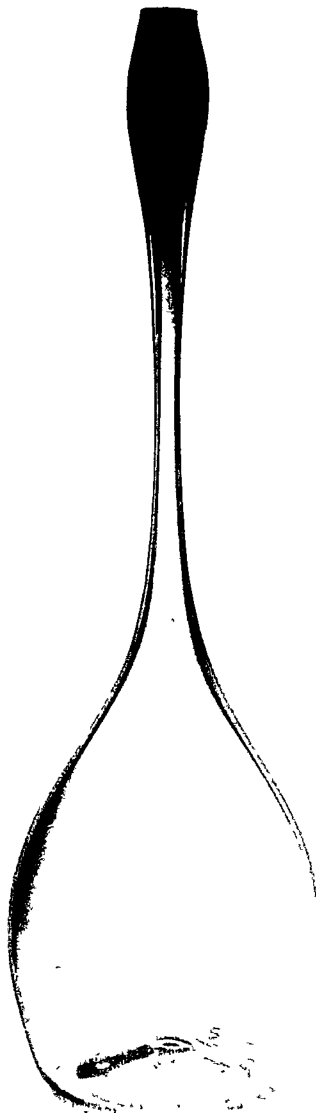
Parts of a drinking service

The name Lobmeyr has been associated with the production of quality glass in the Austrian industry for more than a hundred years The more conservative approach to the material shown by Ludwig Lobmeyr (1829 to 1917) resulted in his adherence to an elegant decoration carried out in the Northern Bohemian centres of Haida and Steinschonau After 1902 when Stephan Rath joined the company, there came a re orientation towards the con temporary Viennese style of the early twentieth century, to the development of which Josef Hoffmann and his Viennese Studio (founded 1903) greatly contributed Grace of form and a feeling for proportion have characterised Lobmeyr pieces up to the present day, and are to be seen in the illustrated wine service, reminiscent of classical Venetian glass



227 Vase

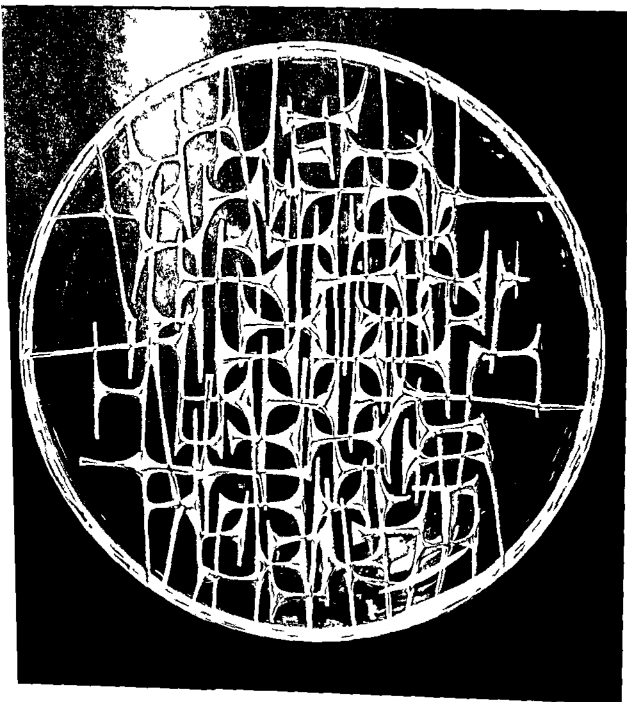


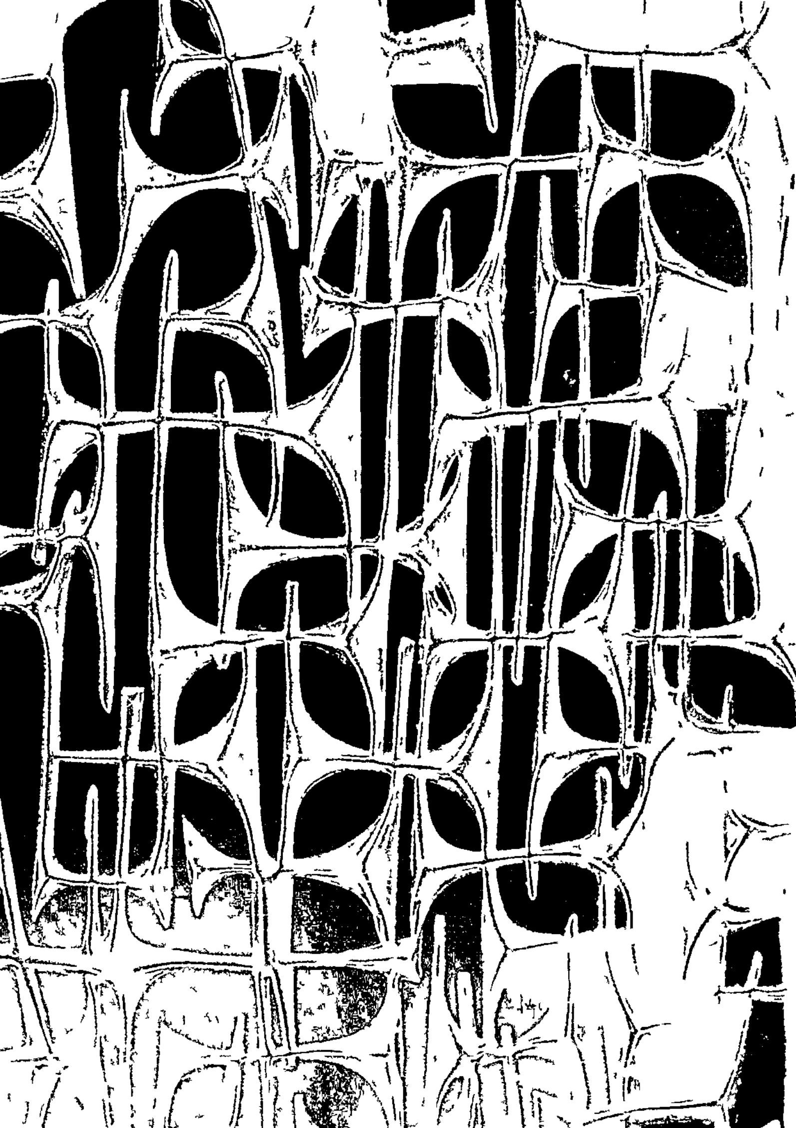


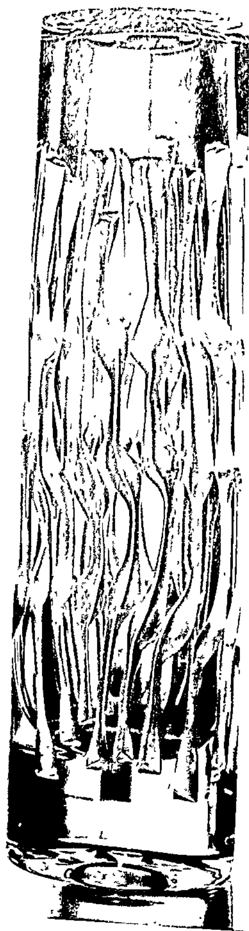
layer vase

29/230 Plate
with sand blast engraving

The technique of sand blasting enables Ladislaus Oliva to give thick lead crystal glass a new and exciting appearance His decorative themes tending towards the monumental which have evolved from an earlier somewhat rigid tectonic to increasingly free and irregular rhythmic forms always appear to result from the natural lights of the heavy glass mass



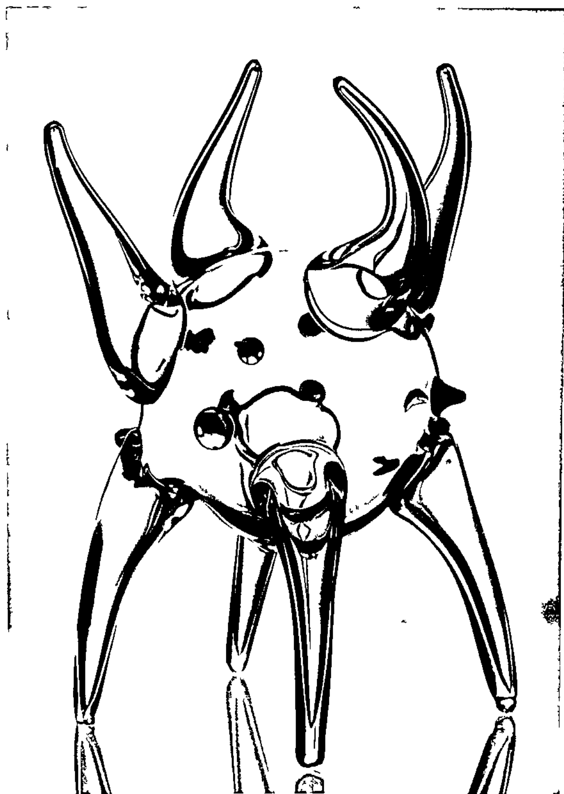




231 Vase decorated
with sand-blast engraving

sculpture

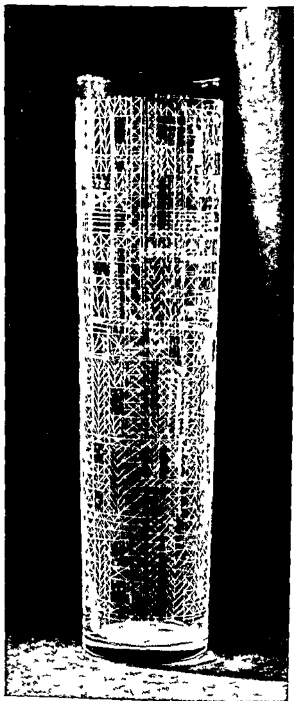
Rene Roubiček directs his efforts towards creating free hand worked pieces with brilliant effects We see in his work a continuation of the medieval glass making tradition heightened into an even more cultured art form His hollow blown pieces take on the appearance of modern sculpture, and are imbued with that poetry which results when the craftsman s creations rise above the utilitarian and are conceived with quiet humour or happy fantasy

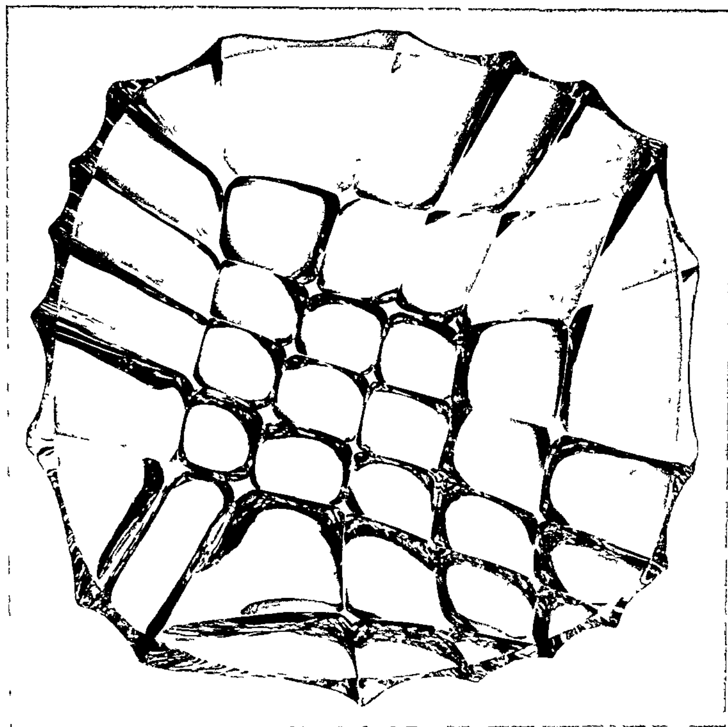


33 Lustre-decorated vase

34 Vase with engraved line pattern







ɔllow bowl
ep facettıng

Czechoslovakıan glass ıs known for ıts great tradıtıon ın lead crystal cuttıng This ıs not only contınued at the present tıme, but ıs constantly findıng new expressıon It ıs still worthwhile to enhance the brilliance of this high quality glass by clever cutting The style of cutting has nevertheless changed considerably Instead of the usual diamond or star motifs, free, irregular patterns have now come to the fore

36 Jug

37 Tall jug

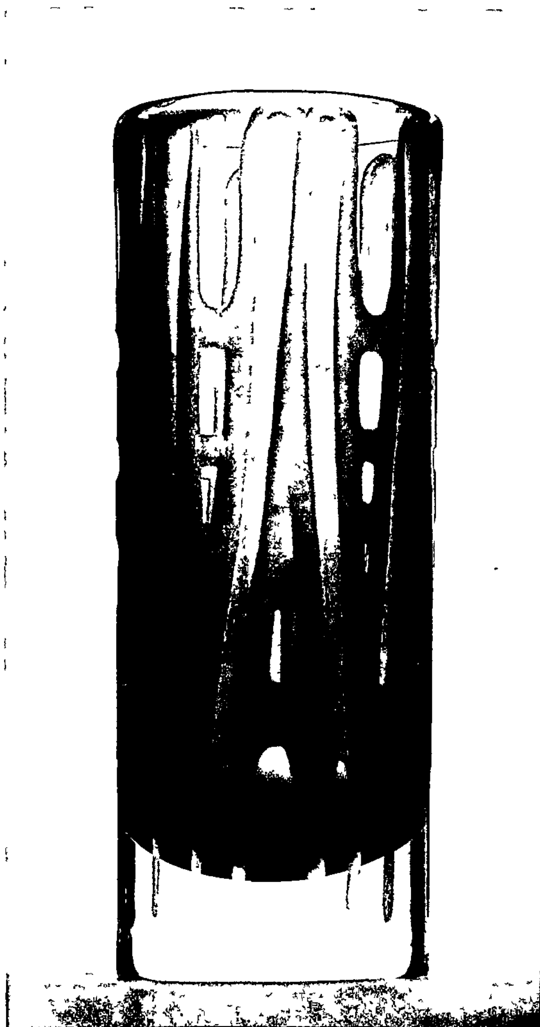
In both jugs we see the blending of the traditions of German *Waldglas* of the seventeenth century with the principles of the German Werkbund, which sought harmony of form and function in every object produced Functions such as fitting, storing, carrying and pouring determined the shape of the vessel Here the lively outline derives from the basic form of blown glass, the sphere Here also is a material which, owing to the very nature of its manipulation requiring swiftness readily meets modern mass production's demand for speed And yet all parts all the lines in the piece are so delicately balanced one against the other that the overall effect is one of simplicity and economy resulting in elegance of form an excellent model for all industrial design





8 Vase in alabaster-like metal

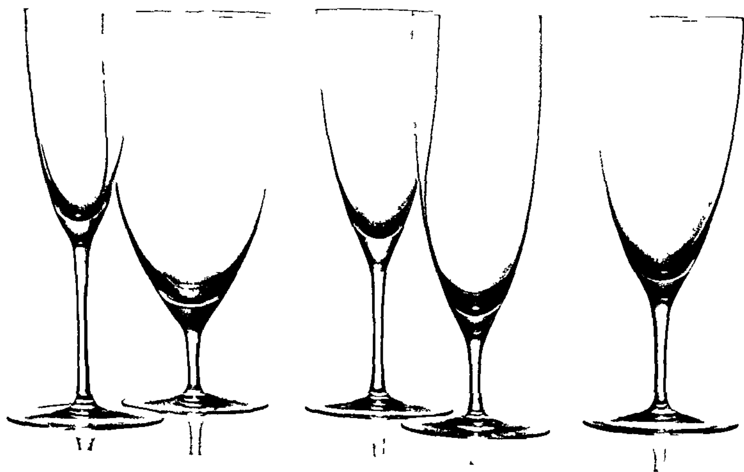




e with cut decoration

o Table glasses

1 Blue glass vase with colourless insertions





42 Table glasses

43 Drug jars





Catalogue

1 Beaker of Thothmes III

Turquoise coloured, opaque glass with blue and yellow thread decoration
Height 8 4 cm
Munich, Ägyptische Staatssammlung

The glass, moulded over a clay core, has the shape of a lotus bud It has a small foot and a short, squat stem bearing the slightly conical cup On it are garland like glass threads fused into the surface, and the cartouche of Pharaoh Thothmes III

Egypt, 18th Dynasty, about 1450 B C

References Frederic Neuburg *Antikes Glas* Darmstadt 1962 Colour plate Ia Ludwig F Fuchs *Die Glaskunst im Wandel der Jahrtausende* Darmstadt 1956 fig 1

2 Head showing the face of Amenhotep III

A mixture of dark blue and yellowish glass
Height 3 8 cm
Munich, Ägyptische Staatssammlung

This head, made from glass of two colours, moulded then cut, wears the Royal head dress with the symbol of the snake's head on the forehead

Egypt, c 1375 B C

Reference *Journal of Glass Studies* The Corning Museum of Glass Corning New York Vol II 1960, p 138 fig 1

3 Small amphora

Opaque blue glass with coloured combed decoration
Height 12 5 cm
Berlin, Staatliche Museen, Ägyptisches Museum

This egg shaped vessel stands on a wide conical foot It has light blue, white and yellow combed decoration, which on the lower part and on the neck is garland like, and in the middle forms a palm leaf pattern The neck is cylindrical, curving slightly at the top, and provided with small dolphin handles

Egypt, c 1350 B C

Reference: compare a similar piece in Glass from The Corning Museum of Glass a Guide to the Collections , Corning New York 1958, fig 2

4 Two containers for balm or cosmetics (On the right an alabastron, on the left an unguentarium)

a) Opaque blue glass with yellow and white combed decoration
Height 7 cm
Berlin Charlottenburg, formerly Staatliche Museen, Department of Antiquities

Squat bottle with flattened base, with a wide rim over a narrow neck Two small loops for a carrying string are seen on the side of the bottle Decorated with palm leaf pattern in yellow and white

Egypt, 3rd Century B C.

b) Opaque white glass with brown combed decoration
Height 13 cm
Berlin Charlottenburg, formerly Staatliche Museen, Department of Antiquities

Raindrop shaped bottle with four carrying loops, short neck and wide rim Spiral thread decoration in brown, drawn horizontally, is seen on the upper part of the bottle, turning into a zig zag pattern in the lower part

Egypt, 6th Century B C

Reference similar vessels are to be seen in Frederic Neuburg's *Antikes Glas* Darmstadt 1962 Colour plate IIb and fig 11

5 Necklace of a Nubian Queen

Glass beads, faience, shells and gold chain links
Berlin Staatliche Museen, Ägyptisches Museum

The necklace consists of eight rows, the inner two joined by small tubular beads The fourth row contains many shells, threaded in pairs, of a brown and white spiral pattern In the middle of the fifth row are ridged glass beads, gilt and covered with a layer of glass, and to the right and left of them are many ' eye ' beads and red glass beads in the form of round berries In the sixth row there are nineteen components with eye insets (amulets) forming links in the necklace The arrangement of the beads as seen today is not original The components that have come down to us were probably those of a larger collar ornament, and after purchase by the Berlin Ägyptische Museum were arranged to form two necklaces

Nubia, first half of the 1st Century B C

Reference Heinrich Schafer *Ägyptische Goldschmiedearbeiten* Mitteilungen aus der Ägyptischen Sammlung Konigliche Museen zu Berlin Berlin 1910, plate 33

6 Large amphora

Colourless glass with gilt bronze mount
Height 59 6 cm
Berlin Dahlem, formerly Staatliche Museen Department of Antiquities

The vessel has a bell shaped foot, an egg shaped body, flattened above the shoulder, a tall, slender neck, an outward curving rim, and a conical lid It is made in two parts

Alexandria, c 200 B C

Reference Adolf Greifenhagen, *Antike Kunstwerke* Berlin 1960 fig 85

7 Millefiori bowl

Glass in four colours
Diameter 11 5 cm
Berlin Charlottenburg, formerly Staatliche Museen, Department of Antiquities

Shallow bowl with a wide, raised edge Background colour violet with a yellow flower pattern, green stalks and a wreath of yellow red tulips

Alexandria, 1st Century B C

Reference Robert Zahn, *Die Sammlung Friedrich Ludwig von Gans im Antiquarium* in the *Amtliche Berichte aus den Königlichen Kunstsammlungen* 35 fig 30 (1913)

8. Ribbed bowl

Azure blue glass, moulded, then cut
Diameter 18 cm
Cologne, Römisch-Germanisches Museum

Shallow, footless bowl with vertical, slightly twisted rib ornament, producing a very bold effect, but cut away at the rim

Roman, second half of the 1st Century A D

Reference Fritz Fremersdorf *Römisches geformtes Glas in Koln, Die Denkmaler des romischen Koln, Vol VI*, Cologne 1961, fig 55

9 Tall ribbed bowl

Azure blue with a pronounced iridescence, either mould-blown or with applied trailed decoration
Diameter 9 cm
Berlin Charlottenburg, formerly Staatliche Museen, Department of Antiquities

Rounded bowl with distinct inward curve at the neck and slightly widening rim Vertical ribs are the sole decoration, and give the impression of having been trailed onto the vessel

Roman, middle of the 1st Century A D

References *Amtliche Berichte aus den Königlichen Kunstsammlungen* Berlin 1907 p 59 fig 41, for similar bowls see also Fritz Fremersdorf *Römisches geformtes Glas in Koln, Die Denkmaler des romischen Koln Vol VI*, Cologne 1961, plate 62

10 Syrian domestic glass vessel

Impure glass in light green
Height 14 5 cm
Weimar, Museum fur Ur- und Frühgeschichte Thüringens

Club shaped standing bottle

Syria, found at Garizim 1–2 Century A D

11. Syrian domestic glass vessel

Height 12 cm
Weimar, Museum fur Ur- und Fruhgeschichte Thüringens

Jug with trefoil mouth in light green transparent metal, top of the handle forming a snake's head

Syria, found at Garizim, 1–2 Century A D

12 Syrian domestic glass vessel

Height 8 cm
Weimar, Museum fur Ur- und Frühgeschichte Thuringens

Globular vessel with short neck and folded rim, whitish, slightly transparent glass

Syria, found at Garizim, 1–2 Century A D

13. Bottle with relief decoration

Blue glass, mould blown
Height 9 cm
Leipzig, private collection

Hexagonal, vase shaped vessel standing on a small base Tall neck terminating in a thickish rim On the walls, relief decoration with Jewish motifs (vases between pillars)

Sidon c 200 A D

Reference Compare a similar bottle in Frederic Neuburg s *Antikes Glas*, Darmstadt 1962, fig 41

14 Two twin Alabastra

a) Bluish green glass with white trailing, with triangular shaped handles, showing a silvery iridescence
Height 11 cm
b) Green glass A hollow tube was bent and white threads were trailed round the two parts of it Tiny handles, silvery iridescence
Height 9 cm
Eisenach, Thuringer Museum

Syria, 2nd to 3rd Century A D

15. Shell-shaped flask

Green glass, mould blown, with trailed decoration
Height 19 cm

Cologne, Römisch Germanisches Museum

The body of the vessel takes the form of a pilgrim's shell with distinct grooves This is supported by a short, thickish stem on a sturdy, rounded foot Spiral trailing decoration is seen on the neck, and two slender handles curve from the shoulders of the vessel to the widening rim, where they form two small loops

Rhenish, c 300 A D

Reference Fritz Fremersdorf *Romisches geformtes Glas in Koln, Die Denkmaler des römischen Köln Vol VI*, Cologne 1961, fig 165

16 Flask in the form of a bunch of grapes

Blue glass with yellow handles and yellow trailed decoration
Height 17 cm
Cologne, Romisch Germanisches Museum

Mould blown consisting of two identical halves with the result that the seam is clearly seen, the vessel stands on a broad flattened foot The body of the vessel is in the form of a grape cluster The neck is long and slender with a funnel shaped opening, and delicate, ingeniously twisted handles A yellow thread of glass in a spiral round the neck is an additional decoration

Cologne, 3rd Century A D

Reference Fritz Fremersdorf *Romisches Buntglas in Koln Die Denkmaler des romischen Koln Vol III*, Cologne 1958, fig 81

17 Flask in the form of a Janus head

Pale greenish metal
Height 25 3 cm
Cologne Romisch Germanisches Museum

The vessel has a conical foot and a funnel shaped neck with wide opening The body of the vessel blown into a mould consists of two almost identical halves each in the form of a man s face

Rhenish 3rd to 4th Century A D

Reference Fr tz Fremersdorf *Rom bes geformtes Glas in Koln D e Denk mäler des rom chen Koln Vol VI* Cologne 1961 fig 172

18 Vessel in the form of a girl s head

Blue glass
Height 20 cm
Berlin Charlottenburg formerly Staatliche Museen Department of Antiquities

The foot is of modest proportions the neck funnel shaped and wide with a sharply bent handle joining the neck horizontally and attached at the lower end to the main body of the vessel The latter takes the form of the head of a girl with long wavy hair Another piece from the same mould is to be seen in the Corning Museum New York

Gaul 2nd Century A D

References Adolf Greifenhagen *Antike Kunstwerke* Berlin 1960 Plate 86 *Glass from the Ancient World The R W Sm th Collection Exhibit on Catalogue* Corn ng Museum New York, 1957 p 141 Frederic Neuburg *Antikes Glas* Darmstadt 1962 fig 101

19 Negro head bottle

Whitish green glass
Height 15 5 cm
Cologne Romisch Germanisches Museum

This bottle takes the shape of a negro head The features are somewhat caricatured the mouth with its thick lips is half open the nose flattened the forehead has bulging brows and there is a wart on the right cheek The neck of the bottle is short with a wide rim and two dolphin handles attached to it The bottle was blown into a two part mould

Roman 2nd 3rd Century A D

References Anton Kisa *Das Glas im Altertum* Le pz g 1908 p 757 fig 305 Fr tz Fremersdorf *Röm s bes geformtes Glas in Koln D e Denk mäler des romis hen Koln* Vol VI, Cologne 1961 fig 169

20 Ridged beaker

Bluish green the glass containing numerous small bubbles
Height 20 7 cm
Cologne Römisch Germanisches Museum

This beaker like vessel gradually widening out towards the rim has five folds or ridges on the body and a primitive trailed spiral decoration around the neck It was found on the Alteburg near Cologne on the site of the home port of the Roman Rhine fleet

Rhenish c 200 A D

References Fritz Fremersdorf *Zur Geschichte des fränkischen Rüsselbechers Wallraf Richartz Jahrbuch N F.*, Cologne 1933/34 p 16 Plate 11 Ignaz Schlosser *Das alte Glas* Brunswick 1956 plate 12

21 Pear shaped ewer

Light green to dark green metal streaked with white
Height 31 cm
Cologne Romisch Germanisches Museum

The slender pear shaped ewer has a steep conical foot with a folded rim The neck widens at the top into a funnel shape and has an inwardly folded rim The handle which is round in cross section forms a knot where it meets the rim Found at Cologne

Cologne end of the 3rd Century A D

22 Free blown ewer

Light green metal with blown spiral decoration
Height 27 cm
Berlin Staatliche Museen Department of Antiquities

Above the widish foot the kicked base of the ewer protrudes into the main part of the vessel and is visible through the thin wall The ewer is pear shaped widening rapidly above the foot and narrowing even more abruptly above the shoulders into a slender neck with a decoration of a double ring The opening is funnel shaped and the ribbon like handle is looped beneath the rim

Romano Rhenish 3rd–4th Century A D

Reference Department of Ant qu t es, Katalog der Staatlichen Museen Berlin, Berl n 1957 fig 59

23 Cinerary urn

Green glass with blue handles
Height 31 cm
Nuremberg Germanisches Nationalmuseum

A globular vessel with a somewhat narrow neck which opens out considerably however so that the rim almost touches the M shaped handles A tall conical lid crowns the whole

Rhenish beginning of the 2nd Century A D

24 Vessel with trailed decoration

Height 8 cm
Berlin Charlottenburg formerly Staatliche Museen Department of Antiquities

A small globular body with a neck curving sharply inwards and a wide funnel shaped mouth A zig zag decoration stretches between the rim and the shoulders of the vessel masking the slender neck

Syrian or Roman 3rd–4th Century A D

25. Small, five-handled amphora

Light, bluish green with blue handles and blue trailed decoration

Height 11 cm

Berlin Charlottenburg, formerly Staatliche Museen, Department of Antiquities

The round body of the jug stands on a fairly wide foot ring The neck is long, widening into a funnel shape and decorated with spiral trailing below the mouth and below the point where the five handles meet the neck The handles, rising at points on the shoulders of the vessel, have the appearance of celery stalks

Syria, 3rd Century A D

References Compare W B Honey, *Glass, Victoria and Albert Museum* London 1946 plate 11, fig b, and *Glas, Katalog des Kunstgewerbemuseums der Stadt Koln,* edited by Brigitte Klesse, Cologne 1963, no 19

26. Stamnium

Greenish glass

Height 32 cm

Berlin, Staatliche Museen, Antikensammlung

Cylindrical body with kicked base and long neck, funnel-shaped throat is double ringed, wide, flat handles attached to throat run vertically down to shoulders

Roman or Rhenish, 3rd to 4th Century A D

27. Pear-shaped ewer

Yellowish green metal with spiral decoration

Height 22 3 cm

Cologne, Römisch Germanisches Museum

The foot is wide, the body of the vessel slender at its base, widening sharply towards the middle, then narrowing again into a slender neck, and the mouth is wide with a flat rim Two rings, pincered flat, ornament the neck, and a handle stretches vertically from the widest part of the body to the rim, where it forms a knot The surface of the vessel is decorated with a spiral of four threads trailed close together

Cologne, end of the 3rd, beginning of the 4th Century A D

Reference *Deutsches Glas 2000 Jahre Glasveredelung Hessisches Landesmuseum Darmstadt, Exhibition Catalogue* edited by H Merten, Darmstadt 1935, plate 239

28. Conical ewer, or Prochus

Green glass with white marbling

Height 23 cm

Cologne, Romisch Germanisches Museum

This conical vessel, widest at the base, stands on a thick foot The rim is decorated with a frilly ribbon of glass The handle is flat, and strongly ribbed There is a vigourous marbling pattern in the glass from which the ewer is made

Cologne, end of 3rd – beginning of 4th Century A D

Reference See vessels with similar marbling in Fritz Fremersdorf's *Römisches Buntglas in Köln Die Denkmaler des romischen Koln Vol III,* Cologne 1958 plate 106

29. Small amphora with applied decoration

Originally clear, now clouded glass with applied decoration and white inlaid threads

Height 17 cm

Berlin Charlottenburg, formerly Staatliche Museen, Department of Antiquities

Small, flat foot, and compressed knop, both in glass with spiral thread ornament Broad, pear shaped body with inlaid pattern of wavy lines on the lower part Two bands of three threads run round the shoulder Slender, funnel like neck The general shape reveals Greek influence The authenticity of the foot is questionable

Syria or Greece, 3rd to 4th Century A D

30 Kantharos

Chestnut brown glass

Height 10 5 cm

Cologne, Romisch Germanisches Museum

Wide cup shaped vessel with small foot, stem consisting merely of a compressed knop, deep rim, large flat handles The elegant shape is inspired by that of certain metal vessels

Italy, 1st Century A D

Reference Fritz Fremersdorf *Römisches Buntglas in Köln, Die Denkmäler des römischen Koln Vol III,* Cologne 1958 plate 35

31. Concave beaker

Dark olive green glass

Height 10 5 cm

Cologne, Romisch Germanisches Museum

The green beaker with concave sides stands on a small base Found in Cologne

Northern Italy, 1st Century A D

Reference Fritz Fremersdorf *Romisches Buntglas in Koln Die Denkmaler des romischen Koln, Vol III,* Cologne 1958, Plate 51

32 Pitcher with trefoil mouth and trailed snake ornamentation

Light green clouded metal with white and blue trailing

Height 12 cm

Nuremberg, Germanisches Nationalmuseum

The round jug, with foot ring, trefoil mouth and elegantly curving handle has a snake like, blue and white trailed decoration

Rhenish, 2nd Century A D

33 Pear-shaped bottle with trailed snake decoration

Colourless glass with blue and white trailing and metallic iridescence

Height 13 9 cm
Cologne Romisch Germanisches Museum

This bottle with its elegant line has a thick foot ring and a tall funnel shaped neck The blue and white trailed snake decoration can be seen on the body of the vessel A ring of blue glass around the neck is an additional decoration The bottle was found in the Aachener Strasse in Cologne

Rhenish 3rd Century A D

Reference Fritz Fremersdorf *Romische Gläser mit Fadenauflage in Koln Die Denkmäler des römischen Koln Vol V* Cologne 1939 plates 28 and 29

34 Bell shaped beaker with stem (Carchesium)

Sea green glass with white and gold trailing
Height 12 cm
Cologne, Romisch Germanisches Museum

The foot is broad and at the point where it joins the stem there is a white ring decoration The knopped stem is rather short The trailed ornament is in the region between the widening mouth and the bulging base of the cup It consists of gold scrolls forming a cross and white haphazard squiggles There is a thick line of trailed glass along the rim The beaker was found in the Weiherstrasse in Cologne

Rhenish 3rd Century A D

References Anton Kisa, *Das Glas im Altertum* Leipzig 1908 Part 2 Plate V 1 facing p 452 p 239 fig 119 Fritz Fremersdorf *Romische Gläser aus Köln* Cologne 1939 colour plate no 1 Fritz Fremersdorf *Römische Gläser mit Fadenauflage in Koln Die Denkmäler des romischen Koln Vol V* Cologne 1959 plate 67 Deutsches Glas 2000 Jahre Glasveredelung, Hessisches Landesmuseum Darmstadt Exhibition Catalogue H Merten Darmstadt 1935 plate 25 no 256

35 Pilgrim's bottle with trailed snake decoration, known as the *Meisterstück* (Masterpiece)

Colourless glass with rich blue, white and gold trailing
Height 27 cm
Cologne Römisch Germanisches Museum

A short stem connects the foot and the body of the vessel which is circular and flat Trailed decoration appears on both sides of the vessel This consists of a central gold spiral from which four blue lines lead out forming the midribs of four leaves the silhouettes of which are trailed in gold In the angles formed by the leaves we see four garlands which consist of a ruffle pattern in gilt red and blue trailing The neck of the vessel is tall and has a funnel shaped mouth The sides of the body and the handles are ornamented with pincered ridges The bottle was found in the Luxemburger Strasse in Cologne in 1893 The given date was confirmed by the presence of the fragments of a similar bottle in a hoard containing coins of the period

Cologne 3rd Century A D

References Fritz Fremersdorf *Römische Gläser aus Köln* Cologne 1939 coloured plate II; Fritz Fremersdorf *Römische Gläser mit Fadenauflage in Köln, Die Denkmäler des römischen Köln, Vol V* Cologne 1959, plates 70, 71

36 Conical flask with gold painting

Extremely thin colourless glass
Height 10 cm
Leipzig, Museum des Kunsthandwerks

This conical vessel has a slightly rounded base and a small funnel shaped neck The decoration is confined to a panel running round the sides of the bottle marked off by two fine engraved lines The painting represents three trees and figures of praying working and playing youths

Rome 1st–2nd Century A D

37 Cylindrical two handled bottle (Stamnium)

Greenish glass with shallow cutting
Height 33 6 cm
Cologne Romisch Germanisches Museum

The surface of the vessel is marked off into four areas by double engraved lines running horizontally The three lower areas are decorated by shallow cutting into simple geometrical designs (hobnail patterns circles straight lines) and oval facets A plain stamnium is illustrated in plate 26 (q v)

Cologne 4th Century A D

Reference compare similar vessels in Fritz Fremersdorf's *Römische Gläser aus Koln* Cologne 1939 plate 41

38 Hemispherical bowl with facetting

Clear colourless glass with cut decoration
Diameter 13 cm
Cologne Romisch Germanisches Museum

This hemispherical bowl has three ridges cut into it below the rim and below them a row of eyelet shaped shallow facetting and below that four rows of disc shaped cuts

Cologne 2nd half of the 3rd Century A D

Reference Fritz Fremersdorf *Romische Glaser aus Koln* Cologne 1939 plate 36

39 Shallow bowl with chariot racing motif

Colourless glass with line and (wheel?) engraving
Diameter 27 cm
Cologne Römisch Germanisches Museum

In a small round area in the centre of the bowl we see a representation of a Roman emperor and surrounding this four chariot racing teams taking part in a race The dish was found on the site of a Roman estate in Cologne Braunsfeld in the year 1910 Coins of the time of the Emperor Constantine found with the dish made it possible to date it accurately

Rhenish c 320 A D

References Fritz Fremersdorf *Der Römische Gutshof in der Stolberger Straße zu Köln-Braunsfeld Bonner Jahrbucher* 1930, no 135 p 131 Fritz Fremersdorf *Kurzer Fuhrer durch die Römische Abteilung des Wallraf Richartz-Museums zu Koln* Cologne 1927 plate 2 Fritz Fremersdorf *Römische Gläser aus Köln* Cologne 1939 plate 46

40 Goblet with shell decoration

Once colourless, now opaque whitish glass
Height 21 5 cm
Cologne, Romisch Germanisches Museum

The goblet has a short knopped stem, and a slightly domed foot The cup is tall, slender and slightly conical, and, forming a kind of cage round it, there is a decoration of trailed glass moulded into shell shapes, which is, however, raised away from it

Cologne, beginning of the 4th Century A D

Reference Otto Doppelfeld, *Der Muschelpokal von Köln Bonner Jahrbucher* 1959, no 159 p 153ff

41. Diatreton

A single piece of almost colourless glass
Height 10 5 cm
Munich, Museum of Antiquities (Antikensammlung)

The very fine rim of this glass was ground on the wheel Below it we see the raised inscription "Bibe multis annis", and beneath this a network which also extends underneath and supports the vessel The glass was found in 1844 in the Benenisstrasse, Cologne, on the site of the western gate of the Roman Colony It was presented to King Ludwig I of Bavaria in acknowledgment of his donation of timber for the roof of the Cologne Cathedral Another diatreton was found at the same time in a sarcophagus nearby, and was sent to Berlin, where it was destroyed by war action in 1945

Rhineland (most probably Cologne), beginning of the 4th Century A D

Reference Otto Doppelfeld, *Das Kölner Diatretglas und die anderen Netzdiatrete* Gymnasium, Heidelberg, Vol 68 1961, p 410–424 fig 3 1

42 Diatreton

Inner wall in colourless glass, inscription purplish red, collar honey yellow, surrounding network green
Height 12 1 cm
Cologne, Romisch Germanisches Museum

The beaker has an outward curving rim, and beneath this a Greek inscription, consisting of seventeen raised letters, and expressing an exhortation to drink *ΠΙΕ ΖΗΣΑΙΣ ΚΑ ΛΩΣ ΑΕΙ* Collar decoration in the form of loops Network consisting of three rows of circles, twelve in each row, and *one row of six oval shapes, surrounding* the vessel and extending underneath it, where one large circle acts as a base The inner wall of the vessel is 1 5 mm thick, the network c 2 mm thick, and the space between network and inner wall c 5 mm It would appear from the shape and position of air bubbles in the cup and connecting shanks that the vessel was *produced from a single, solidly blown* body The coloured layers are overlaid The rim, the lower edge of the undercut collar, and the furrow between collar and network were cut on a kind of turning lathe Signs of grinding on the shanks and on the network would indicate the use of a wheel The glass was found as part of the burial hoard of a sandstone sarcophagus on the site of a Roman cemetery in Cologne Braunsfeld, on 1st April 1960 The position of the sites where such diatreta glasses have been found, and the nature of the vessels, lead us to conclude that they were manufactured in Cologne

Cologne or Rhineland, beginning of the 4th Century A D

References Otto Doppelfeld *Das neue Kolner Diatretglas* Germania, Berlin, Vol 38 1960 p 403–417, Otto Doppelfeld, *Das Kolner Diatretglas und die anderen Netzdiatrete* Gymnasium Heidelberg Vol 68 No 5 1961 p 410–424, Otto Doppelfeld *Das Diatretglas aus dem Gräberbezirk des romischen Gutshofs in Koln-Braunsfeld* Kölner Jahrbuch fur Vor und Früh geschichte Berlin Vol 5 1960/61, p 7ff

43 Dolphin beaker

Greenish glass with blue decoration
Height 13 cm
Cologne, Romisch Germanisches Museum

There are two rows of hollow prunts drawn downwards so as to resemble elephants' trunks The lower row reaches the foot ring and the upper row terminates in a fish like tail, so that the ornaments of this row resemble dolphins This resemblance is enhanced by applications of blue glass representing the dolphins' mouths and fins Part of a burial hoard found in the Severinstrasse in Cologne

Cologne, 4th Century A D

Reference Fritz Fremersdorf *Zur Geschichte des fränkischen Russelbechers Wallraf Richartz-Jahrbuch N F.*, Cologne 1953/54 p 7ff

44 Tall bowl in colourless glass with trailed coloured zig-zag ornamentation and flat button shaped blobs

Diameter 12 cm
Cologne, Romisch Germanisches Museum

The rim is curved slightly outward with the trailed decoration (so called dog tooth pattern) beneath The blobs have raised edges and a somewhat protruding centre

Cologne, beginning of the 4th Century A D

Reference compare similar pieces in Fritz Fremersdorf *Römische Gläser mit Fadenauflage in Koln Die Denkmäler des römischen Köln Vol V*, Cologne 1959 plates 131 132 133

45 Beaker with coloured prunts, known as *Humpen*

Colourless glass with blue and green decoration fused on to it
Height 14 5 cm
Cologne, Römisch Germanisches Museum
A footless beaker with rounded base and conical in shape There is a thin engraved line below the rim The decorative elements are in two layers and consist of coloured ovals and small prunts

Rhenish, 4th Century A D

Reference Fritz Fremersdorf *Die römischen Gläser mit aufgelegten Nuppen in Köln Die Denkmäler des römischen Köln, Vol VII* Cologne 1962, plate 9

46 Two Frankish beakers

Light moss green glass with blue spots
Height 10 cm
Berlin Charlottenburg formerly Staatliche Museen Department of Antiquities

Rhenish, 6th Century A D

47 Rüsselbecher (Rüssel = proboscis) also termed trunk or claw beaker

Dark green glass with large hollow prunts
Height 19 cm
Cologne Romisch Germanisches Museum

The basic shape of this vessel is conical It has a small foot ring and the part immediately above it is slender and decorated with horizontally trailed glass threads Another area ornamented in this way lies below the rim much wider than the foot Between these two areas is the claw decoration there are two rows of five claws each claw is hollow and has a line of pincered glass trailed on the length of its outer surface

Rhenish 5th Century

Reference Fritz Fremersdorf *Zur Geschichte des frankischen Rüsselbechers Wallraf Richartz Jahrbuch N F* Cologne 1933/34 p 7ff Ludwig F Fuchs, *Die Glaskunst im Wandel der Jahrtausende* Darmstadt 1936 fig 12

48 Drinking horn

Greenish glass with dark brown and green trailing
Length 24 5 cm
Cologne Romisch Germanisches Museum

The foot end is tilted upwards and strengthened with a ring of glass The lower part of the horn is decorated with fine spiral trailing On the body of the horn the trailing is lengthwise in zig zag pattern or straight lines A more compressed zig zag pattern runs horizontally below the rim between two thin threads

Rhenish 4th Century A D

Reference Fritz Fremersdorf *Römisches geformtes Glas in Koln Die Denkmäler des römischen Köln Vol VI* Cologne 1961 fig 44

49 Footless beaker

Light blue glass
Height 10 cm
Leipzig Museum des Kunsthandwerks

Footless glass resembling a whipping top in shape with waisted body and pointed base

Frankish 6th to 7th Century A D

50 Footed beaker

Brownish rather incrustated iridescent glass
Height 8 cm
Berlin Staatliche Museen Vorderasiatisches Museum

The foot is flattened the stem which supports the broadly conical beaker rather short

Syria 5th Century A D

Reference compare similar glass in *Glas Katalog des Kunstgewerbemuseums der Stadt Köln* edited by Brigitte Klesse, Cologne 1963 no 28

51 Mould blown bottle with surface decoration

Height 15 cm
Berlin Dahlem formerly Staatliche Museen Islamic Department

Bell shaped bottle with tall funnel shaped neck The decoration is in the form of arcading and almond shaped motifs obtained by blowing into a mould This bottle was acquired in Teheran

Egypt 10th–12th Century

References see similar work in Carl Johan Lamm, *Mittelalterliche Glaser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929 plates 12 and 13 *Journal of Glass Studies The Corning Museum of Glass Corning Glass Centre Corning New York, Vol III* 1961 p 138 fig 13 which shows the same motifs although cut, not mould blown on a bottle in the City Art Museum Missouri U S A *Erganzung zu dem Katalog Islamische Kunst aus den Berliner Museen formerly Staatliche Museen Berlin Museum Dahlem* edited by Ernst Kuhnel Berlin 1954 p 10, No 463

52 Bowl with winged horse decoration

Opaque light brown glass
Diameter 10 cm
Berlin Staatliche Museen Islamisches Museum

The sides of the vessel are decorated with seven moulded medallions representing winged horses A glass thread runs horizontally round the bowl some distance below the rim

Syria c 700 A D

References Carl Johan Lamm *Mittelalterliche Glaser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929 plates 10 and 15 Robert Schmidt *Das Glas* Berlin 1912 fig 20

53 Hexagonal flask

Light brownish glass with geometrical relief decoration
Height 16 5 cm
Berlin Staatliche Museen Early Christian Byzantine Department

The six sided bottle was blown into a mould It is shouldered and the neck narrows upwards to a point slightly above half its length then widens out into a funnel shape A thickish ring decorates the neck below the rim

Syria 5th Century A D

References see similar vessels in Frederic Neuburg's *Antikes Glas* Darmstadt 1962 fig 40 *Journal of Glass Studies The Corning Museum of Glass Corning Glass Centre Corning New York, Vol III* 1961 p 137 fig 9

54 Small ewer with disc decoration

Greenish glass greatly corroded and iridescent
Height 12 8 cm
Berlin Staatliche Museen Vorderasiatisches Museum

A round body with inverted conical neck, bulbous throat and rim extended to form a lip An upright handle curves *over to join the rim* The button like blobs, which decorate the body of the vessel in three rows, were obtained by the technique of mould blowing

Syria, 9th Century A D

Reference see similar glass in *Glas Katalog des Kunstgewerbemuseums der Stadt Koln edited by Brigitte Klesse* Cologne 1963 No 34

55 Beaker with cut decoration

Greenish glass
Diameter 9 5 cm
Berlin, Staatliche Museen, Islamic Museum

The decoration consists of cuts in straight and curved lines forming a geometrical pattern The beaker was excavated on the terrace of the Caliph's Palace in Samarra in 1911

Mesopotamia, 9th Century A D

Reference Carl Johan Lamm *Das Glas von Samarra* Berlin 1928 plate V

56 Jug with thread decoration

Greenish iridescent glass with green and blue trailing
Height 22 5 cm
Berlin Dahlem, formerly Staatliche Museen, Islamic Department

Jug in the shape of a mosque lamp conical foot, wide, rounded body, tall funnel shaped neck Small handle meets the neck and shoulders, where they are ornamented with three and two circuits of blue threads respectively Below the two threads, zig zag trailing, and three groups of three applied rosettes A further trailed line round the lower part of the body

Syria, c 1200

Reference Carl Johan Lamm *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929 plates 27 and 13

57 Hedwigsglas

Light brown glass with cutting in high relief The gilt copper foot is a later addition
Total height 29 cm

Nuremberg, Germanisches Nationalmuseum
The cup is slightly conical Stylised representations of lions and griffons in high relief, with contrasting plain and ribbed surfaces, form the decoration Between the animal representations are patterns arranged in bands

Egypt, 11th Century

Reference Carl Johan Lamm, *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929 plate 63 and 64

58 Emerald green bottle with cut ornament

Height 29 cm
Berlin Dahlem, formerly Staatliche Museen Islamic Department

Plant pot shaped body, wide shoulders, slender conical neck, wide, flat rim On the shoulders there is a frieze with *facet cutting, and on the neck a geometrical pattern* There is diamond shaped cutting and circular facetting on the body of the vessel Similar vessels may be seen in the Corning Museum, New York, and in the Museum fur Kunst und Gewerbe, Hamburg

Persia, 9th to 10th Century A D

References *Glass from the Corning Museum of Glass Guide to the collections* Corning New York 1958 fig 21, Lise Lotte Moller *Flasche von smaragd grünem Glas* in *Stiftung zur Forderung der Hamburgischen Kunstsammlungen Erwerbungen 1962* Hamburg 1962 p 50–52 with colour plates *Ergänzung zu dem Katalog Islamische Kunst aus den Berliner Museen Staatliche Museen Berlin Museum Dahlem* edited by Ernst Kuhnel, Berlin 1954 p 12 no 489

59 Beaker with gold and enamel painting

Pale purple coloured glass with blue and white enamel colours and gold painting
Height 7 2 cm
Berlin, Staatliche Museen, Islamisches Museum

The beaker is funnel shaped, has a two tiered foot and painted decoration in the ' combed pattern

Egypt, 12th Century

Reference Ernst Kühnel *Neuerwerbungen an islamischen Gerät Berliner Museen Berichte aus den preussischen Kunstsammlungen LXIII–LXIV 1942/43* p 31 fig 10

60 Small bottle with lustre painting

Greenish glass with brownish gold lustre painting
Height 9 5 cm
Berlin Dahlem, formerly Staatliche Museen, Islamic Section

A pear shaped bottle with tyre shaped foot and funnel shaped neck, complete with a bulge forming a ring, extending to a widish opening The bottle is lustre painted, the pattern consisting of a row of spirals between two thick horizontal lines The neck decoration, calligraphy like, does not mean anything

Egypt, 11th Century

Reference Carl Johan Lamm *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten Berlin 1929–1930 Vol I* colour plate B/2, Vol II plate 34 3 compare a similar glass in the Victoria and Albert Museum London W B Honey *Glass* London 1946 plate 16a

61 Beaker with inscribed eulogy

Pale, slightly yellow glass, with red, blue, white and light green enamel painting
Height 19 5 cm

Berlin Dahlem, formerly Staatliche Museen, Islamic Section
Cylindrical body widening towards the mouth, with fused foot ring There is a decorative border in lustre and enamel painting below the rim, and, some distance below this, a swimming fish motif Then comes a frieze with trefoil pattern and arabesque foliage in gold and enamel Around the

middle of the vessel is a calligraphic border consisting of a eulogy, the words painted in gold surrounded by red This is interrupted by three medallions with coloured leaves and arabesque foliage

Syria c 13th Century

References Robert Schmidt *Das Glas* Berlin 1912 plate 26 *Islamische Kunst aus den Berliner Museen Staatliche Museen Berlin Museum Dahlem* Catalogue edited by Ernst Kuhnel Berlin 1954 p 31 no 293

62 Beaker with horse and rider medallions

Yellowish, shallowly fluted glass with lustre and enamel painting
Height 31 cm
Munich, Bayerisches Nationalmuseum

Straight sided body, widening towards the mouth, flat, spreading foot Trefoil frieze in lustre painting below the rim below this a border of painted spirals There is a wide border at the point where the vessel narrows showing seated women and wine drinkers in gold and enamel painting executed on a fine background of gold scroll work The lowest frieze has three medallions each depicting a horse and rider

Syria, c 1290

Reference Carl Johan Lamm *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929 plate 159 1

63 Bottle with trailed decoration

Blue corroded glass
Height 21 cm
Berlin Dahlem formerly Staatliche Museen Islamic Section

Squat rounded body, on a thick foot ring, a tall slender neck terminating in a flattened rim At the base of the neck a thick ring of glass, twisted so as to form a series of scrolls (running dog), has been applied The original gold decoration, three griffons and an inscription can hardly be distinguished to-day

Syria end of the 12th Century

Reference Carl Johan Lamm *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929 plate 89

64 Perfume sprinkler, known as an Omom

Heavily corroded glass with rich gold enamel painting
Height 20 cm
Berlin Dahlem, formerly Staatliche Museen, Islamic Section

The body of the vessel is spherical and a slender, chimney like neck emerges from it The decoration is hardly visible, owing to corrosion On the shoulder, however, we can distinguish a frieze with a zig zag pattern and gilt festooning on a blue background, punctured by medallions showing birds of prey and ducks Between the medallions are yellow and green parrots C J Lamm considers this bottle to belong to the group of vessels of acknowledged Chinese influence

Persian, c 1350

References Carl Johan Lamm *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929 plate 176 5 *Islamische Kunst aus den Berliner Museen Staatliche Museen Berlin Museum Dahlem* Catalogue edited by Ernst Kuhnel Berlin 1954 p 31 no 292

65 Mosque lamp

Light green glass with rich gold and enamel painting
Height 33 5 cm
Berlin Dahlem, formerly Staatliche Museen, Islamic Section

The lamp has a high, domed foot with a frieze of floral medallions and trefoils The lower surface of the large body shows Chinese lotus flowers, and on the sides there is an inscription in praise of the Sultan al Nasir Muhammed, in gold on a blue ground There are six loops for suspending the vessel Round the throat we see a gold painted frieze of leaves and flowers A text from the Koran ornaments the neck (Sure 24, 38) in blue on a gold background

Syria, first half of the 14th Century

References Carl Johan Lamm *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929 plate 190, 10 *Islamische Kunst aus den Berliner Museen Staatliche Museen Berlin Museum Dahlem* Catalogue edited by Ernst Kuhnel Berlin 1954 plate p 13

66 Beaker with tracery and spot decoration

Light glass with trailing and enamel spots
Height 8 cm
Berlin Dahlem, formerly Staatliche Museen, Islamic Section

The foot ring is pincered, and the beaker is decorated in a pattern of tracery, produced by trailing and in the spaces enamel spots in white, yellow, red and green, the Lily of the Valley ' decoration have been applied The beaker was found in Syria, and was in the collection of F v Gans until 1913, when it was bequeathed to the Berliner Antiquarium

Venice, 15th Century

References Robert Zahn *Die Sammlung Friedrich Ludwig von Gans im Antiquarium* in *Amtliche Berichte aus den Königlichen Kunstsammlungen Berlin* XXXV 1913 fig 56 *Three Great Centuries of Venetian Glass The Corning Museum of Glass Exhibition Catalogue* Corning New York 1958 p 29 and 31 fig 3 4 and 5 *Glass from the Corning Museum of Glass Guide to the collections* Corning New York 1958 p 35 fig 30 *Glas aus vier Jahrtausenden Helmhaus Zurich Exhibition Catalogue* Zurich 1956 fig 23 Giovanni Mariacher *Edle Gläser von der Antike bis Murano* Munich 1962 plate 34

67 Ewer

Dull yellow glass with blue spout and handle
Height 17 cm
Berlin Dahlem formerly Staatliche Museen, Islamic Section

Spreading, ribbed foot, rounded body with spiral ribs, tighter round the tall slender neck

Venice(?) end of the 15th Century

Reference *Islamische Kunst aus den Berliner Museen Staatliche Museen Berlin Museum Dahlem* Catalogue edited by Ernst Kühnel Berlin 1954 p 31, no 276 The ewer is here identified as Syrian, 10th–11th Century

68 Bowl with typical Venetian scale-pattern

Dark green glass
Height 6 cm
Munich, Bayerisches Nationalmuseum

The squat, rounded vessel stands on a relatively large foot ring A wide band round the body of the bowl shows light gilding, and white enamel spots, round which thin lines have been drawn, producing a scale like pattern A row of blue enamel spots is seen on the shoulders

Venice, c 1500

69 Marriage goblet

Opaque white glass with enamel painting
Height 12 7 cm
Prague, Národní Museum

Foot with raised ribs, bowl resting on seven leaf like projections Gilt scale decoration with red and blue enamel dots, and two medallions, each showing one of a marriage pair

Venice end of the 15th Century

References Karel Hettes, *Venezianisches Glas* Prague 1960 fig 1 For the style of painting see *Three Great Centuries of Venetian Glass The Corning Museum of Glass Exhibition Catalogue* Corning, New York 1958 fig 11

70 Beaker with *grotesque painting*

Colourless glass with enamel painting in various colours
Height 11 5 cm
Prague, Národní Galerie

Hollow spreading foot with folded edge Beaker, conical with blue and white gemmed border and grotesque painting showing putti mounted on dragons and crabs Red and blue enamel streaks on the foot

Venice, beginning of the 16th Century

Reference Karel Hettes, *Venezianisches Glas* Prague 1960 fig 10

71 *Goblet with jewelled enamel border decoration*

Cup, clear glass with enamel painting, foot, blue glass
Height 17 cm
Nuremberg, Germanisches Nationalmuseum

The foot is tall, conical and with a ribbed decoration The base of the bowl is ornamented with a pincered ring, the cup itself bell shaped with a border of enamel spots below the rim (gemmed or jewelled border)

Venice, late 15th – early 16th Century

72 Four wine glasses

Colourless glass
Prague, Národní Galerie

The foot of each glass is flat and disc like, one goblet has a thin stem gradually widening upwards, the remaining three have baluster stems, all stems are hollow The bowls are conical, two waisted, and of various proportions

Venice, first half of the 16th Century

Reference Compare Karel Hettes *Venezianisches Glas* Prague 1960 fig 15

73 Wine glass

Green, clouded glass, scale gilt and jewelled
Height 14 5 cm
Halle, Staatliche Galerie Moritzburg

Flat foot, hollow baluster stem and wide conical cup with gilt border and enamel spot (gemmed or jewelled) decoration beneath the rim

Venice, c 1500

74 Ribbed glass

Light smoke coloured glass
Height 20 5 cm
Munich, Bayerisches Nationalmuseum

Hollow pedestal stem with folded rim, ribbed knop between two rings, and a trumpet bowl, ornamented with vertical ribbing on the lower two thirds of its surface

Hall in the Tyrol c 1550

References Walther Bernt, *Altes Glas* Munich 1950 fig 6 Erich Egg, *Die Glashutten zu Hall und Innsbruck im 16 Jahrhundert Tiroler Wirtschafts studien*, 15 Innsbruck 1962 fig 16

75 Jug and beaker

Light coloured glass with gold and enamel painting
Height of jug 28 cm , height of beaker 13 cm
Leipzig, Museum des Kunsthandwerks

The jug shows a hollow pedestal foot with hollow shaft ring, pear shaped body, funnel shaped neck and curving handle Three lustre painted friezes bordered with enamel dots ornament the neck Four diamond shaped medallions, also lustre painted, may be seen on the body of the vessel The base of the slightly conical beaker is kicked, there is a border of enamel dots below the rim

Venice, first half of the 16th Century

76 Flagon with *latticino* decoration

Colourless glass with opaque *latticino* decoration
Height 12 cm
Halle, Staatliche Galerie Moritzburg

Pear shaped vessel with plain foot ring and bell shaped cover Two decorative handles in the form of sea horses, in white glass with pincered additions linked by a ring of zig zag trailing *Latticino* decoration in vertical stripes with two alternating interlaced patterns

Venice c 1600

Reference Otto Heinz Werner *Schones Glas in der Moritzburg zu Halle, Katalog der Staatlichen Galerie Moritzburg*, Halle 1957, fig 13

77. Flute-glass with criss-cross *latticino* work (*reticella* glass)

Clear glass with *latticino* decoration and silver-mount
Height 35 cm.
Nuremberg, Germanisches Nationalmuseum

Flat, disc-shaped foot, hollow baluster stem with silver knop, very tall, slender body. All the glass part exhibits the *latticino* technique.

Venice, early 17th Century.

78. Ewer, *latticino (reticella)* glass

Colourless glass with opaque white threads
Height 24 cm
Dresden, Grünes Gewolbe

Foot in *latticino* glass with folded edge, and blue shaft-ring. Egg-shaped body with trefoil opening and high, curving handle.

Venice, c. 1600

79. Snake-glass in the *façon de Venise*

Colourless glass, showing air bubbles, with blue, red and white glass in the wings
Height 17 5 cm.
Leipzig, Museum des Kunsthandwerks

Flat, spreading foot, short shaft linked to the trumpet-shaped bowl by an elaborate twist of red and white glass with blue pincered wings.

Cassel (in Germany), 17th Century.

80. Winged glass in the *façon de Venise*

Colourless glass with blue ornament
Height 20 5 cm.
Hamburg, Museum fur Kunst und Gewerbe

Flat disc-like foot, stem consisting of six hollow knops alternately large and small, conical bowl Attached to the stem, wings of blue threads with colourless pincered ornament, giving the appearance of sea-horses

Probably Holland or Belgium, 17th Century

References A similar piece is illustrated in *Journal of Glass Studies, The Corning Museum of Glass, Corning Glass Centre, Corning, New York, Vol III*, 1961, p 139, fig 20, It belongs to the collection of F. Smith jr, and is identified as "perhaps' Liège, 17th Century, Trenton, New Jersey

81. Winged glass in the *façon de Venise*

Colourless glass with white and blue thread ornament
Height 18 cm.
Nuremberg, Germanisches Nationalmuseum

Flat, disc-like foot, plain shaft evident above and below the snake-like twist, this ornament having four pincered tabs and terminating upwards in two eagle-head-shaped wings. Slightly rounded bowl on a slender upper stem.

Probably Belgium, beginning of the 17th Century.

Reference compare glass, shape and colour in *Die alten Gläser und Glasgemälde der Sammlung Bremen in Krefeld, Rheinisches Landesmuseum in Bonn, Exhibition catalogue*, 1964, No. 209, fig 41, with similar decoration.

82. Goblet made to resemble agate (German: *Schmelzglas*)

Glass streaked with blue, green and yellow tones
Height 17 cm.
Munich, Bayerisches Nationalmuseum

Slightly domed foot, mould-blown stem with impressions of lions' heads, bell-shaped bowl.

Venice, most probably 19th Century There are much earlier examples of *Schmelzglas* (compare B Honey, *Glass*, London, Victoria and Albert Museum 1946, p 8)

83. Beaker with Neptune motif

Opaque white glass
Height 15 5 cm.
Leipzig, Museum des Kunsthandwerks

The straight-sided, mould-blown beaker shows a lively image of Neptune with sea-chariots and tritons in high relief. The colour of the vessel changes according to how the light falls from white, through yellow, to purple tones.

Venice, 17th Century.

Reference Walter Holzhausen, *Sächsische Gläser des Barock*, in *Zeitschrift für Kunstwissenschaft, Berlin, Vol. VIII*, 1954, p 107, *Three Great Centuries of Venetian Glass, The Corning Museum of Glass, Exhibition catalogue*, Corning New York 1958, fig 120, *Glass from The Corning Museum of Glass, Fuhrer zu den Sammlungen*, Corning, New York 1958, fig 39.

84. Spouted ewer, *façon de Venise*

Colourless glass
Height 11.5 cm
Halle, Staatliche Galerie Moritzburg

Conical body with projecting kick in base, funnel throat, and curving spout The tightly curving handle is knotted to a frilled ring, greenish-blue in colour, encircling the neck, and terminates in a spreading leaf-like extension

Probably German, 16th Century.

85. Millefiori tankard

A mixture of colourless, yellow, white, reddish-brown and purple glass
Height 15 cm.
Halle, Staatliche Galerie Moritzburg

The slightly bulging tankard has a thick handle of clear glass and a silver lid with foliage ornament.

Venetian, c. 1600.

Reference Otto Heinz Werner *Schones Glas in der Moritzburg zu Halle, Katalog der Staatlichen Galerie Moritzburg*, Halle 1957, fig 14

86 Wine glass with ribbed and applied pincered decoration

Very thin, colourless glass
Height 19 cm
Hamburg, Museum fur Kunst und Gewerbe

Flat, disc-like foot, tall, hollow blown stem, nipped towards the top, flowerlike bowl with eight ribs, and pincered trailing on the lower half

Venice, late 16th–early 17th Century

Reference *Three Great Centuries of Venetian Glass, The Corning Museum of Glass Exhibition catalogue* Corning New York 1958 fig 114

87. Plate with the arms of Duke Ernst of Bavaria

Colourless glass with gilding and unfired painting
Diameter 42 5 cm
Munich, Bayerisches Nationalmuseum

In the centre of the plate, the arms of Bavaria with the date 1536, surrounded by bands of wreathed foliage On the rim, more foliage decoration and four medallions showing heads of ancients The plate belongs to the ewer shown in illustration No 89

Hall in the Tyrol, 1536

Reference Erich Egg *Die Glashutten zu Hall und Innsbruck im 16 Jahrhundert Tiroler Wirtschaftsstudien 15*, Innsbruck 1962 fig 6

88 Goblet with cover

Colourless glass with diamond engraving, gilding and *unfired painting*
Height 34 cm
Munich, Bayerisches Nationalmuseum

Smallish foot, flattened ball knop, large egg shaped body curving in at the shoulders, concave neck and double-domed cover ornamented with raspberry prunts Four mask medallions are set on the shoulders The painted decoration on the body shows Tyrolean eagles and wreaths of fruit framed by diamond engraved arcading Moorish patterns embellish the remaining areas

Innsbruck, Hofglasshutte, 1570–1580

References Heinrich Kohlhaussen, *Geschichte des deutschen Kunsthandwerks* Munich 1955 fig 348, Erich Egg, *Die Glashutten zu Hall und Innsbruck im 16 Jahrhundert Tiroler Wirtschaftsstudien 15*, Innsbruck 1962 fig 31

89 Spouted ewer in the Venetian style

Colourless glass with gilding and unfired painting
Height 33 5 cm
Munich Bayerisches Nationalmuseum

The foot of this vessel is hollow and conical The lower part of the pear shaped body shows carefully executed ribbing A horizontal rib marks the beginning of the shoulder, which narrows towards the double ring encircling the neck at the point where it is joined by an S shaped handle Above this point the neck widens into a funnel shape and another double ring may be seen below the rim The spout is tall and curved The motifs of the painted decoration are as follows on the foot, straight and wavy lines, on the lower part of the body, floral swags, above the horizontal rib, the arms of Bavaria (on either side of the ewer) surrounded by foliage, on the neck, foliage and line ornament At the base of the spout, a medallion showing human figures has been applied

Hall in the-Tyrol, 1536

Reference Erich Egg, *Die Glashutten zu Hall und Innsbruck im 16 Jahrhundert, Tiroler Wirtschaftsstudien 15* Innsbruck 1962 fig 7

90 Porrón

Colourless glass with *latticino* decoration
Height 21 cm
Berlin, Staatliche Museen, Kunstgewerbemuseum

Conical vessel with slender neck and wide, funnel shaped rim, and straight conical spout jutting out at an angle from the body near the base *Latticino* stripes and rosettes form the only decoration

Spain, 17th Century

91 Drinking vessel

Light, yellowish brown, imperfect glass with blue additions
Height 19 cm
Munich, Bayerisches Nationalmuseum

The base exhibits a conical kick, and foot ring Urn shaped body, narrowing into a truncheon shaped neck with no opening, but terminating in a double knop in blue The handle, curving like a question mark, joins a wavy line of glass which surrounds the neck The spout is straight, almost vertical, and has a lip of blue glass The Venetian influence is marked in this vessel

Spain, possibly Barcelona, 16–17th Century

92 Jarrita

Pale green glass with thread decoration
Height 15 cm
Berlin, Staatliche Museen, Kunstgewerbemuseum

Solid, ribbed foot ring squat, rounded body extending into a large funnel shaped neck, spiral trailing on neck and body, and wavy trailing near base Four handles with pincered trails, and applied drops A *Waldglas* with Moorish influence

Southern Spain, 17th Century

93 Cantaro

Colourless glass with white spirals
Height 28 cm
Berlin, Staatliche Museen, Kunstgewerbemuseum

Hollow conical base with high kick, oval shaped body with filler and sharp spout Large circular loop as handle *Striped* glass, with the exception of the handle

Spain, Catalonia, 17th Century

94 Stangenglas (in this shape also termed Keulenglas from German *Keule* = club)

Pale yellow-green glass with impurities
Height 15 cm
Eisenach, Thuringer Museum

Wide foot, high projecting kick, slightly conical body with three notched trailed spirals

German, c 1500

Reference Franz Rademacher *Die deutschen Gläser des Mittelalters* Berlin 1963 Plate 33

95. Double conical bottle

Height 16 cm
Nuremberg, Germanisches Nationalmuseum

Sturdy foot ring body in the form of two cones meeting at the base, formed by folding one bubble of glass Upper part, roof like, broader than the lower Short, chimney like neck

German, c 1500

References Bottles of this type are illustrated by Robert Schmidt *Das Glas* Berlin 1912 fig 75 und Franz Rademacher *Die deutschen Glaser des Mittelalters* Berlin 1963 plate 16

96 Beaker

Pale green glass with impurities
Height 10 2 cm
Leipzig, Museum des Kunsthandwerks

Flared beaker with flattened foot ring and high kick

German, 15th Century

Reference Similar beakers in Franz Rademacher *Die deutschen Glaser des Mittelalters* Berlin 1963 plates 28a und b

97 Spouted ewer

Pale green glass, ribbed
Height 10 8 cm
Hamburg, Museum fur Kunst und Gewerbe

Pear shaped body with high kick no foot ring, S shaped spout and handle pinched to form a tight loop Ten slightly swirled ribs

German, 15th Century

Reference Franz Rademacher, *Die deutschen Glaser des Mittelalters* Berlin 1963 plate 17a

98 Maigelein

Bluish green glass
Diameter 10 cm
Nuremberg, Germanisches Nationalmuseum

Footless, boat shaped beaker with vertical ribbing

German, 15th Century

99 Nuppenbecher

Green glass
Diameter 9 cm
Nuremberg, Germanisches Nationalmuseum

Crinkled foot ring, squat, rounded body with seven applied drops drawn upwards to a point, heightened drinking rim

German, 16th Century

100 Honey-comb moulded glass

Green glass
Height 7 cm
Cologne, Romisch Germanisches Museum

Beaker shaped with honey comb ribbing, produced by blowing twice into a mould

German, 15th Century

101 Moulded jug

Dark green glass
Height 10 5 cm
Eisenach, Thuringer Museum

Round foot ring pear shaped body flaring towards the mouth, and diagonal ribbing Applied handle pinched into shape

Thuringia, 16th Century

102 Tall Stangenglass

Brownish glass, hardly transparent owing to corrosive action
Height 42 6 cm
Prague Museum hlav mesta Prahy

Pedestal foot narrow cylindrical body ornamented with twenty six horizontal rows of tiny, snake like prunts Above and below this decorated part, a ring has been applied

German first half of the 15th Century

Reference Franz Rademacher *Die deutschen Gläser des Mittelalters* Berlin 1963 plate 38b

103 Krautstrunk

Dark green glass
Height 10 5 cm
Leipzig Museum des Kunsthandwerks

Convex beaker with twelve large applied drops, drawn upward to a point Crinkled foot ring and spreading lip

German, c 1500

104 Stangenglass

Green glass
Height 19 5 cm
Hamburg, Museum für Kunst und Gewerbe

Spreading foot, narrow cylindrical body and tall spreading

lip, decorated with six vertical rows of applied drops drawn out horizontally to a point

German, c 1500

Reference Franz Rademacher *Die deutschen Gläser des Mittelalters* Berlin 1963 plate 51

105 Nuppenbecher with owner's inscription

Bluish green glass with applied drops and blue circuit
Height 19 cm
Leipzig, Museum des Kunsthandwerks

Crinkled foot ring and conical kick in base, body widening slightly upwards and decorated with five rows of large drops Blue thread some distance below the rim A diamond scratched inscription of later date referring to the then owner of the beaker is visible on the plain area beneath the rim Hanns Sebastian Neithart von und zu Baustetten anno 1640 den 5 Martzii

German, beginning of the 16th Century

Reference *Kunsthandwerk und Plastik aus Deutschland im Museum des Kunsthandwerks Leipzig* edited by Anneliese Hanisch Leipzig 1961 plate 8

106 Römer

Dark green glass
Height 12 cm
Eisenach, *Thuringer Museum*

Core wound foot hollow cylindrical shaft with raspberry prunt, a circuit of milled trailing beneath the spherical (cracked) bowl

German, beginning of the 17th Century

107 Nuppenbecher

Pale, bluish green glass
Height 22 cm
Nuremberg, Germanisches Nationalmuseum

Toothed foot ring cylindrical body with four rows of applied drops drawn upwards to a point tall lip, widening upwards

German, beginning of the 16th Century

108 *Mallet shaped (Bocksbeutelform) bottle*

Dark olive brown glass
Height 23 cm
Eisenach Thuringer Museum

Hemispherical body with high projecting kick and tall chimney like neck Glass circuit beneath the opening The *Bocksbeutelform* is the traditional shape for the containers of Steinwein (wine from the Main area in Franconia)

German 17th Century

Reference Walter Dexel, *Deutsches Handwerksgut* Berlin 1939 fig page 434

109 Ribbed spirit flask

Clear, pale green glass
Height 24 cm
Eisenach, Thuringer Museum

Mould blown bottle with smooth, vertical ribbing and projecting kick Small opening and pewter screw top

German 16th Century

Reference Walter Dexel *Deutsches Handwerksgut* Berlin 1939 fig page 432

110 Oviform bottle

Light green glass with impurities showing bubble texture
Height 28 cm
Eisenach Thuringer Museum

Oviform bottle with kick projecting slightly, smooth outline and lead mount at the opening

German 16th Century

111 Bottle with spiral trail

Rough bluish green glass
Height 23 cm
Eisenach, Thuringer Museum

Body, inverted pear shape with projecting kick Opening with bulbous rim Spiral trail round the neck

German 16th–17th Century

Reference Walter Dexel *Deutsches Handwerksgut* Berlin 1939 fig page 434

112 Decanter derived from the Kuttrolf

Purple tinged glass
Height 22 cm
Eisenach Thuringer Museum

Small foot, the lower body is large and spherical and is connected to the upper body, which is smaller and also spherical, by five tubes Notched trailing on both parts

German, 17th Century

113 Ribbed bottle with pinched neck

Pale bluish glass mould blown
Height 24 cm
Eisenach Thuringer Museum

Deeply ribbed mould blown body with slightly projecting kick Neck pinched to form four tubes Funnel shaped opening with wavy rim

German 16th–17th Century

Reference Anna Elisabeth Liederwald *Thuringische Gläser des 16 Jahrhunderts* in *Wissenschaftliche Zeitschrift der Friedrich-Schiller Universität Jena* Jena 7 1957/58 p 360 fig 20

114 Four tubed Kuttrolf

Pale yellowish green glass
Height 17 cm
Munich, Bayerisches Nationalmuseum

Wavy foot ring, mould blown body, rounded and coiled, with two milled trails encircling it, four short, spirally twisted tubes opening into the lip, which is inclined sideways

German, 16th Century

115 Four sided decanter derived from the Kuttrolf

Clear glass
Height 31 cm
Nuremberg, Germanisches Nationalmuseum

Square base, with a slight kick Small upper and lower containers connected by one weak central and four corner tubes Cylindrical neck

German, 17th Century

116 Wine jug

Bluish green glass with pinched trailing
Height 30 cm
Eisenach, Thuringer Museum

Wide, hollow foot two bulbed body and tall funnel mouth Three diagonal pinched trails, and two zig zag rings ornament the jug Flattened handle

German, 17th Century

117 Daumenhumpen (Thumb glass)

Dark green glass
Height 21 cm
Eisenach, Thuringer Museum

Sturdy foot, oviform body with six depressions into which finger and thumb were inserted Notched trailed ring below the narrowing lip, and above the foot The Daumenhumpen is shown in a copper engraving of 1554, "Man with Humpen', by Hans Lautensack, in the Staatliche Kunst sammlung, Weimar

German, 16th–17th Century

Reference Anna Elisabeth Liederwald *Thüringische Gläser des 16 Jahr hunderts Wissenschaftliche Zeitschrift der Friedrich-Schiller-Universität Jena* Jena 1957/58 7, No 2/3 p 359 fig 15

118 Ring glass (German also *Ringelglas*)

Colourless, clouded glass
Height 14 cm
Nuremberg, Germanisches Nationalmuseum

Tall, core wound foot, flute shaped also with milled spiral trail and four rings hanging from angular loops

German, 16th Century

119 Small ewer

Pale green glass with impurities
Height 13 cm
Eisenach, Thüringer Museum

Rounded body with slightly projecting kick and long chimney like neck Curving spout with wide base, small curving handle, bulbous where it joins the neck

German, 16th Century

Reference Anna Elisabeth Liederwald *Thüringische Gläser des 16 Jahr hunderts in Wissenschaftliche Zeitschrift der Friedrich-Schiller-Universität Jena,* Jena 1957/58 7 No 2/3 p 357 fig 4

120 Passglas

Colourless imperfect glass with circuits
Height 26 cm
Leipzig, Museum des Kunsthandwerks

Cylindrical glass with spreading foot, high conical kick, and six horizontal milled trails, the fourth and fifth applied spirally Rim smoothed out at the glory hole

German 16th–17th Century

121 Phallus glass

Green glass with mould blown pattern
Length 25 cm
Nuremberg Germanisches Nationalmuseum

Hollow vessel with funnel shaped opening

German, 16th Century

122 Trick glass in the form of a bear

Dull colourless glass, partly blown into a mould
Height 17 cm
Nuremberg Germanisches Nationalmuseum

Hollow, twisted body with hollow legs, arms and head applied Funnel shaped opening emerging from the animal s back

German, 17th Century

123/124 The Mainz Dean and Chapter Glass

Light, bluish green glass with rich diamond point angraving
Height 32 5 cm
Munich, Bayerisches Nationalmuseum

Broad stem with applied drops Large bowl completely covered with diamond point engraving The design consists of a view of Mainz in the year 1617, the arms of Archbishop Johann Schweikart von Kronberg (1604 to 1626) and the arms and initials of the members of the Cathedral Chapter The inscription below the rim reads 'Celsitudo atque Nobilitas Florentissimae Metropolitanae Ecclesiae et Civitatis Moguntinae, ut es Anno 1617 constitu' The glass bears the signature 'I R fecit, 1617"

Netherlandish, 1617

Reference Ludwig F Fuchs *Die Glaskunst im Wandel der Jahrtausende* Darmstadt 1956 p 28 and fig 19

125 Armorial Humpen

Colourless glass with enamel decoration
Height 39 cm
Munich, Bayerisches Nationalmuseum

Cylindrical vessel with only slightly curving walls, projecting kick, applied foot ring and four tiered cover terminating in a knop As decoration, two coats of arms of the Palatinate, with the inscription "Otto Heinrich Pfaltzgrave bey Rhein Dorothea Maria Pfaltzgrevin bey Rhein geborene Herzogin zu Wurttenberg" Between the arms the date 1596 Below the gemmed border the letters D T R H (*Deum time regen honora*)

Southern German, 1596

Reference Alice Bethe Kranzner, *Emailglas* Reallexikon zur deutschen Kunstgeschichte 49 Stuttgart 1959 col 75 fig 4

126 *Humpen of the Magdeburg Cathedral Chapter*

Pale green glass with enamel painting
Height 29 cm
Leipzig, Museum des Kunsthandwerks

Slightly curving walls, and hollow applied footring Cover not extant Decorated area divided into two zones by gemmed borders Arms of the twelve members of the Cathedral Chapter, and in the upper zone an image of St Mauritius, with the date 1594

Saxony, 1594

References *Kunstmuseum der Deutschen Demokratischen Republik Mitteilungen und Berichte Vol 1* 1957 fig 63 for a further glass of this type (undated) see Robert Schmidt *Das Glas* Berlin 1912 fig 84

127 *Humpen with equestrian figure of Gustavus Adolphus*

Colourless glass with enamel painting
Height 17 5 cm
Leipzig, Museum des Kunsthandwerks

Folded foot ring and projecting kick Cylindrical walls decorated with the equestrian figures of Gustavus Adolphus and Johann Georg with the inscriptions ' Gustavus Adolphus Konig in Schweden and Iohann Georg Churfurst zu Sachsen ' and the date 1634 Between the figures, lily of the valley ornament Borders of plain gold stripes between rows of white enamel dots and scalloped lines

Franconia, 1634

128 *Humpen with "Peeping Tom" scene*

Pale green glass with enamel painting
Height 32 cm
Nuremberg, *Germanisches Nationalmuseum*

Slightly curving *humpen*, with three bulbed finial on cover On the walls, a picture of a lover, peeping through the keyhole at a naked maiden lying on a bed *On the reverse side* the inscription

' Wen der Wolff daß Maul Also leckt
sich die Jungfrauw im Bett streckt
So hatt der Wolff gern ein Lam
undt die jungfrauw einen lieben man
anno 1694 '
(The wolf looks on with greedy eye,
The maiden on her bed doth lie,
The wolf would fain devour the lamb,
The maiden hungers for a man")

The metal and the scale border indicate Hessian manufacture

Hesse, 1694

Reference Robert Schmidt *Das Glas* Berlin 1912 p 191 Walther Bernt, *Spruche auf alten Glasern* Freiburg i Br 1928 p 32

129 Humpen with allegory of the Treaty of Westphalia

Colourless glass with enamel painting
Height, including cover, 31 5 cm
Leipzig, Museum des Kunsthandwerks

Projecting kick and applied footring, cylindrical walls, cover with overlapping rim and triple bulbed finial Below the rim, gold border with curving lines of white enamel dots The painting shows the Holy Roman Emperor joining hands with the King of France and the Queen of Sweden, to the left and right kneeling ecclesiastics and citizens Above the figures, God the Father and angels in the clouds Biblical quotations on bands a prayer of thanks on reverse, an "Anno Domini 1654 ' The border indicates Franconian origin

Franconia, 1654

130 Reichsadlerhumpen

Pale green glass with coloured enamel painting
Height 29 cm
Leipzig, Museum des Kunsthandwerks

Cylindrical vessel with footring and conical kick Two-headed eagle with imperial orb and crossed sceptres and 50 coats of arms arranged in groups of four (the Quaternion system) Signed Bohmen (Bohemia), 1654

Bohemia, 1654

131 Ochsenkopfglas (Ox-head glass)

Light green glass with coloured enamel painting
Height 16 cm
Halle, Staatliche Galerie Moritzburg

Beaker in thick glass with projecting kick The painting shows a forested mountain, with an ox's head at the summit *The rivers Eger, Saale, Main, and Naab issue from the foot* of the mountain Forest animals are seen among the trees, and a padlock and chain encircle the top of the mountain Inscription on reverse, and in front the date 1722

Fichtelgebirge, 1722

132 Hallorenglas

Pale green glass with colourful enamel painting
Height 28 cm
Halle, Staatliche Galerie Moritzburg

Club shaped vessel divided into four horizontal zones, showing respectively a panorama of the town of Halle, a triple gabled building the salters procession and the arms of the guild of salters between two apprentices Dated 1681

Saxony, 1681

133/134 Beaker on three feet

Colourless glass with Schwarzlot (black) and translucent enamel painting
Height 10 8 cm
Leipzig, Museum des Kunsthandwerks

Cylindrical beaker on three hollow ball feet The painting, after Callot, shows a horse drawing a high two wheeled cart, yokels women and children On a tree trunk the signature S

Signed piece by Johann Schaper, Nuremberg c 1665

Reference *Kunsthandwerk und Plastik aus Deutschland im Museum des Kunsthandwerks Leipzig*, edited by Anneliese Hanisch Le pz g 1961, plate 27

135 Wine glass with pear knopped stem

Colourless glass
Height 32 5 cm
Halle, Staatliche Galerie Moritzburg

Flat foot, solid stem with two annular knops at the top, and two at the bottom and two hollow pear knops, separated by a single annular knop Conical bowl

Holland, 17th Century

Reference *Schones Glas Staatl che Galerie Moritzburg Halle Exhibition Catalogue* Halle 1957 No 117

136 Tall bowl, diamond point engraved

Colourless lead glass
Height 9 8 cm
London Victoria and Albert Museum
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On the bowl the arms of Butler Buggins (1646?–1690) of North Cray, Kent and Winifred Burnett his wife, whom he married on the 16th July 1676 among foliage a helmet and above a bird with dragon's wings

English probably from the Savoy Glasshouse of George Ravenscroft, c 1676

137 Glass with diamond point engraving

Colourless glass with a slight green tinge
Height 21 cm
London, Victoria and Albert Museum
© Crown Copyright

Flat foot with foliage engraving, hollow fluted bulb between two ring knops, diamond engraving on the straight sided bowl in the upper portion a stag, a unicorn and two hounds, in the central area the inscription "John Jone Dier 1581" and the arms of Queen Elizabeth Leaf motifs in the lower part

English, attributed to G Verzelini, 1581

Reference Robert Schmidt, *Europäisches Glas Die Sammlung Wilfred Buckley* Berlin 1927 plate 83

138 Goblet with portrait of man

Colourless lead glass
Height 25 cm
Hamburg, Museum fur Kunst und Gewerbe

The bowl of the glass shows a portrait of a man lighting his pipe, stipple engraved by Frans Greenwood, whose signature is clearly visible at the base of the bowl

English glass, Newcastle upon Tyne, engraved in Holland, 1746

139 Glass showing putti drinking wine

Colourless lead glass
Height 17 cm
Halle Staatliche Galerie Moritzburg

Another example of stiple engraved glass The delicate engraving gives charm to this otherwise rather heavy-looking glass

Holland, David Wolff, c 1790

140 Bottle with trailed thread decoration

Purple glass
Height 14 cm
London, Victoria and Albert Museum
© Crown Copyright

Depressed, globular body with long vertical ribbed neck, and applied ring Ribs extending from shoulder to form a reticulated pattern on the body

England, c 1675, probably from the Savoy glasshouse of George Ravenscroft

141 Ruby glass bottle

Ruby red with ribbing engraving and ormolu mount
Height 35 cm
Dresden Grunes Gewolbe

Tear shaped bottle mounted on a foot and with top, and chain Cut flower decoration on the spaces between the grooves of the ribbing

Southern German, 17th Century

Reference Compare similar bottles in Ignaz Schlosser *Das alte Glas*, Brunswick 1956 fig 93

142 Ruby-glass beaker mounted on silver gilt foot

Height 12 cm
Dresden, Grunes Gewolbe

Smooth beaker on a base supported by three ball feet

Potsdam, end of the 17th Century

143 Large covered goblet

Ruby glass
Height 31 cm
Eisenach, Thuringer Museum

Wide domed foot, broad stem with compressed ball knop, large, tallish bowl and cover with plain, oviform finial

Probably Potsdam 19th Century

144 Group of musicians made at the lamp

Hollow white glass
Height 8–10 cm
Lauscha, Museum fur Glaskunst

Five Bohemian musicians, three with guitars, and a lamp post The cold painting has in parts flaked off

Thuringia, Lauscha, end of the 18th Century (?)

145 Lamp-blown centrepiece of fountain and birds

Colourless and coloured glass
Height 40 cm
London, Victoria and Albert Museum
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Colourless glass fountain, birds in coloured and spun glass, *trees also in coloured glass*

England, middle of the 19th Century

146 *Glass with allegorical figures*

Colourless, imperfect glass with wheel engraving
Height 24 cm
Prague Národní Galerie

Beaker shaped glass on high folded foot Engravings of 'Potestas', 'Nobilitas' and Liberalitas' surrounded by flowers and insects Signed C Leman F 1605 The figures are after copper engravings by the Flemish artist Johann Sadeler, who received privilege for his engravings from the Emperor Rudolf II

Caspar Lehmann, 1605

Reference Robert Schmidt, *Das Glas* Berlin 1912 fig 122 F X. Jiřík *Ceské sklo* Prague 1934 plate XVIII, fig 42 and 43

147 Covered goblet with hollow stem

Clouded, yellowish glass with polished and unpolished wheel engraving
Height 52 3 cm
Leipzig Museum des Kunsthandwerks

Wide, folded foot, hollow stem with one ball and twelve discs Cover with two hollow ball knops and multiple collars Engraving of the Prodigal Son with the four scenes Leave taking Carousing, the Swineherd, and Return, separated by tall trees On the cover engraved landscape

Attributed by Erich Meyer Heisig to Georg Schwanhardt the Elder (c 1665) Annegrete Janda Bux suggests the Thuringian Master IH, c 1710

Nuremberg glass with Thuringian engraving c 1710

References Annegrete Janda Bux *Der Thuringer Glasschnitt im 17 und 18 Jahrhundert* Leipzig, Thesis 1962 Erich Meyer Heisig *Der Nurnberger Glasschnitt des 17 Jahrhunderts* Nurnberg 1963 WT 49

148 Covered goblet with floral decoration

Colourless glass with polished and unpolished wheel engraving
Height 23 5 cm
Leipzig, Museum des Kunsthandwerks

Flat foot with leaf garlands cut stem with red and green spiral threads, facet cut pointed cover with minute flower and leaf patterns and two areas with figures of lions

Bohemia, beginning of the 18th Century

149 Goblet with arms of Count Schaffgotsch

Clear, colourless glass with cutting in high relief
Height 20 cm
Prague, Národní Galerie

Flat, wide foot, solid pillar stem with upper part enveloped in cut foliage Conch shaped bowl with rich leaf decoration and arms of Count Schaffgotsch

Silesia, Hirschberg Valley, c 1690

References F X. Jiřík, *Ceské sklo* Prague 1934 plate XXIII, fig 51 and 52; J R Vávra, *Das Glas und die Jahrtausende* Prague 1954 fig 190

150 Covered goblet with view of Leipzig

Violet hued glass, with *Hochschnitt* and *intaglio* engraving
Height without cover 21 5 cm
Leipzig, Museum des Kunsthandwerks

Angular foot with *Laub und Bandelwerk* engraving (formal strap work and foliate patterns) Facetted rosette under foot Facetted baluster stem, conical bowl with palmette foliage in the lower part, and on facing sides In between a view of Leipzig with the inscription ' Es lebe die Beruhmte Handelsstadt Leipzig (Long live the famous trading town of Leipzig) On the other side a Rococo scene of a lady and her lover On the rim, shell scroll work, fruit and foliage Small landscapes on the remaining areas

Silesia, c 1760

151 Covered goblet with Venus and Adonis motif

Colourless glass with cameo relief engraving
Height 43 5 cm
Arnstadt, Schlossmuseum (Castle Museum)

Flat foot with solid ball and baluster stem, conical bowl, domed cover with pointed finial Foliage frieze engraved on the foot On the bowl, a scene with Venus and Adonis beneath tall trees Venus, seated on a tree stump, lays her hand on Adonis's hip, and he lets his right hand rest on her shoulder Cover engraved with landscape, ruins and small figures

Thuringia, signed I H (Heinrich Jager or I Hartmann), c 1715–1720

Reference Annegrete Janda Bux *Der Thuringer Glasschnitt im 17 und 18 Jahrhundert* Leipzig Thesis 1962 Catalogue No 160

152 Two engraved glasses

Lead crystal glass
Height c 13 cm
London, Victoria and Albert Museum

a) Glass with conical bowl, and engraving of Prince Charles Edward, the Young Pretender, and air twist stem with two knops
b) Bucket shaped bowl, rose motif engraving and double knopped air twist stem

England, 18th Century

153 Candlestick

Opaque white glass
Height 30 cm
London, Victoria and Albert Museum

Wide domed foot, spirally ribbed shaft, tall nozzle and foot enamel painted

England, c 1760

154 Covered goblet with representation of Neptune

Colourless potash lime glass with rich cutting and engraving
Height 41 cm
Hamburg, Museum fur Kunst und Gewerbe

Scale cutting on foot, baluster stem with scale and diamond pattern Cylindrical facetting on the lower part of the bowl, above this shallow eyelid facets, and circular facets on the rim This decoration is repeated on the cover On the bowl a representation of Neptune with trident and flowing urn in a woody landscape

Potsdam Zechlin, unsigned piece by Elias Rossbach, c 1720

155 Wineglass with Silesian stem

Colourless lead crystal
Height c 17 cm
London, Victoria and Albert Museum

Folded foot, Silesian stem, the shoulder moulded with the words "God save King George", plain bowl with thick base

English, c 1715

156 Wine glass with gilt decoration

Colourless glass
Height 17 5 cm
London, Victoria and Albert Museum

Flat foot, air twist stem double knopped On the wall of the slightly bell shaped bowl in a frame of rocaille ornament is the inscription "Families Friends and Favourites"

English, c 1750

157 Glasses with engraved decoration

a) Drinking glass with engraved decoration
Colourless lead crystal with a slight yellow tinge
Height 22 cm
Corning, New York, The Corning Museum of Glass

Short, hollow, knopped stem with "George Trisler" and the date 1793 on the bowl among foliage ornament

North America, John Frederick Amelung Glassworks, New Bremen, Maryland 1793

b) Covered glass with engraved decoration
Colourless lead crystal
Height 28 8 cm
Corning, New York, The Corning Museum of Glass

Rectangular foot, conical bowl, cover with finial On the bowl a representation of Tobias and the Angel between rocaille motifs, surrounded by the inscription "Happy is he who is blessed with virtuous children Carolina Lucia Amelung 1788"

North America, John Frederick Amelung Glassworks, New Bremen, Maryland, 1788

c) Bottle with engraved decoration
Colourless glass tinged slightly greyish green
Height 17 2 cm
Corning, New York, The Corning Museum of Glass

Rounded body with short neck and slightly thickened rim On the wall 'F Stenger 1792" among floral motifs

North America, John Frederick Amelung Glassworks, New Bremen, Maryland, 1792

158 Tankard with painted decoration

Opaque white glass
Height 11 5 cm
London Victoria and Albert Museum

Cylindrical tankard showing painted landscape with youth carrying stick and basket, dressed in knee breeches and feathered hat

England, c 1760

159 Cut-glass dish

Diameter c 40 cm
London, Victoria and Albert Museum
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The cut design consists of a central rosette, the points of which indicate the division of the plate into nine sections Star motifs form the remaining decoration Raised rim

England, c 1770

160 Zwischengoldglas with coloured painting

Colourless glass with facetting
Height 8 cm
Leipzig, Museum des Kunsthandwerks

Facetted beaker with a stag hunting scene in red, green and brown paint, red and green foliage decoration, and acanthus friezes On the base a gilt riding scene

Bohemia, c 1730

161. Zwischengoldglas with hunting scene

Colourless glass with facet cutting
Height 8 5 cm
Halle, Staatliche Galerie Moritzburg

Facet cut poly-angular beaker There is a hunting scene (rider with lance) round the beaker, bordered by two acanthus friezes The engraving is executed on gold leaf on the interior and silver leaf on the exterior surface Sealed joint of the two glasses round the rim

Bohemia, about 1735

162 Glass with gilt monogram

Colourless glass with facetting and sealed in double wall
Height 11 cm
Leipzig, Museum des Kunsthandwerks

Cylindrical glass with almond- and lentil shaped facetting round the base Red gilt medallion with the monogram A W, surrounded by silver and gold floral wreath Reverse of the medallion, silver inscription on red Wer bey Leerung dieses Bechers seine Freunde liebt und ehrt, dem wünsche ich, daß sich das Glucke tausendfach bey ihm vermehrt ("Whosoever empties this glass, loving and honouring his friends, I wish that his happiness may increase a thousandfold) Mildner fec a Gutenbrunn, 1797' In the bottom of the glass, *Zwischenglas* image of St Agnes with a lamb and the inscription 'Sanct Agnes V, et M" Base, silver gilt with gilt rosettes

Austria, Gutenbrunn, Johann Josef Mildner, 1797

163 Glass with view of Dresden

Colourless glass with transparent enamel painting
Height 10 5 cm
Leipzig, Museum des Kunsthandwerks

Footless beaker View of Dresden with the Hofkirche, Elbe bridge and small figures of townspeople Below right of the picture the signature "Mohn', and left "C v S 1815" Border of leaves and larkspur flowers below the rim The plan for the decoration was applied to the glass as a transfer print C v S (C v Scheid) was a pupil and collaborator of S Mohn

Dresden, signed piece by Samuel Mohn, c 1810

Reference Gustav E Pazaurek, *Gläser der Empire- und Biedermeierzeit* Leipzig 1923 p 171 and fig. 150.

164 Glass showing St Stephen's Cathedral, Vienna

Colourless glass with cutting, gilding and translucent enamel painting
Height 11 5 cm
Leipzig, Museum des Kunsthandwerks

Flared beaker with ribbed, gilt ridged foot Gold acanthus design frieze below rim Scene of St Stephen's Cathedral, executed mainly in sepia tones, surrounded by border of corn-ear motif On reverse, the inscription 'Domkirche zu St Stephan in Wien" Star shaped cutting under the foot

Vienna Anton Kothgasser, c 1825

Reference Gustav E Pazaurek, *Gläser der Empire- und Biedermeierzeit* Leipzig 1923 p 193

165 Glass showing the ages of man

Colourless glass with slight yellow tinge, cut and engraved
Height 11 5 cm
Leipzig, Museum des Kunsthandwerks

Foot deeply incised all round and forming triangles which are criss cross cut Cylindrical body engraved with the ages of man Beneath the flight of steps, a small scene showing the christening drive and the funeral procession The visible inscriptions read as follows '10 a boy, 20 a youth, 30 a man, 40 a success, 50 the turning point, 60 onset of old age'

German, c 1815

166 Sweetmeat bowl and cover

Colourless, slightly greyish cut glass
Height 27 5 cm
Leipzig, Museum des Kunsthandwerks

Massive round foot star cut in base Lower part of the body and stem facet cut, body with cut relief diamonds Facet and diamond relief cutting in alternating bands on the cover and finial

Northern German, c 1820

167 Pear-shaped ewer showing Cupid and Psyche

Cut lead crystal
Height 30 5 cm
Leipzig, Museum des Kunsthandwerks

Plain foot, pear shaped body, tall ringed neck and trefoil opening with long handle attached On the body of the vessel, an engraving of Cupid, about to release his bolt, and Psyche, bound to a tree Below, a frieze in the ' laufenden Hund ' (running hound) pattern

English lead crystal and German engraving c 1850

168 Glass with engraving of Venus

Lead crystal glass with engraving polished and unpolished
Height 8 5 cm
Hamburg, Museum fur Kunst und Gewerbe

Venus is shown seated in a chariot drawn by two swans A dove is perched on each of her wrists A flower frieze ornaments the flared rim

Paris, Charpentier, c 1810

References Franz Adrian Dreier *Geschnittene Glaser von Charpentier Glastechnische Berichte*, 34 Frankfurt/M 1961 p 282ff fig 1 Gustav E Pazaurek, *Glaser der Empire- und Biedermeierzeit* Leipzig 1923 p 40 fig 21

169 Goblet

Lead crystal glass
Height 36 cm
Munich, Bayerisches Nationalmuseum

Relatively small foot with radial cutting hexagonal stem and large bell shaped bowl richly decorated with formal high relief and *intaglio* engraving Cut beading on rim

Ireland beginning of the nineteenth century

170 Mould blown vessels

a) Mould blown bottle, 'pitkin Type"
Transparent green bubbled metal
Height 16 5 cm
Corning, New York, The Corning Museum of Glass

Rounded body with short neck, double moulded (After being blown into a finely ribbed mould, the glass bubble was swiftly revolved and then blown into a second, more widely ribbed mould)

North America, early 19th century

b) Mould blown bottle, known as a ' Grandfather"
Light amber coloured glass
Height 22 4 cm
Corning, New York, The Corning Museum of Glass

Rounded body with short widening neck and double moulded ribbed decoration North America, attributed to Ohio, probably Zanesville Glassworks, first half of the 19th century

c) Mould blown sugar bowl
Transparent light amber coloured glass
Height 16 cm
Corning New York, The Corning Museum of Glass

Wide foot ring, funnel shaped vertically ribbed bowl narrowing below the dish like rim

Double domed with slight spiral ribbing

North America, possibly Zanesville Glassworks, Ohio c 1815–1830

171 Sugar bowl and jug

a) Sugar bowl
Green glass
Height 9 5 cm
Corning, New York, The Corning Museum of Glass

Domed foot, wide rounded bowl with two nipped and knotted handles Domed lid with finial North America, Southern New Jersey, possibly Wistarberg or Glasburg, 18th century

b) Jug with trailed decoration
Colourless glass
Height 18 cm
Corning, New York, The Corning Museum of Glass

Wide foot rounded body with tall wide neck and curving handle Fine trailed threads round the neck On the body garland like trailing The jug belongs to a type known as the McKearin Type 1

North America, attributed to the Lancaster or Lockport Glassworks New York, c 1850

172 Rosenwasserflasche

Cobalt blue glass, blown into a mould
Height 39 cm
Hamburg, Museum fur Kunst und Gewerbe

Foot ring, high kicked base, globular body with long S shaped neck and vertical mouth A fine spiral ribbing ornaments throat and body

Persia, probably Shiraz, 18th century

173 Ewer

Dark green glass
Height 24 cm
Berlin, Staatliche Museen, Islamisches Museum

High kicked base with wide applied foot ring tear shaped body, bulge at throat and funnel shaped opening Widely curving handle Tall curving spout with pincered wing like appendages

Persia, 17–18th century

174 Vase in Persian style

Olive green glass with trailing
Height 17 5 cm
Eisenach, Thuringer Museum

Round foot, low bulging body and tall funnel neck with trailed thread decoration Thick, twisted trailing round the lower part of the neck and, extending from this, four handles drawn down along the body in pinched trails The late

Persian style in which the bottle is made does not exclude the possibility that it was made at a German glass house, probably in Thuringia, for the Persian market There are records of such orders to Bohemian manufacturers A very similar bottle is attributed to Andalusian workshops by A W Frothingham

Probably Thuringia, 19th Century

References Compare similar piece in *Glas Katalog des Kunstgewerbemuseums der Stadt Köln* edited by Brigitte Klesse Cologne 1963, no 565, and Alice Wilson Frothingham *Hispanic Glass* New York 1941, fig 64

175 Bowl

Opaque white glass with red cut overlay
Diameter 24 5 cm
Berlin, Staatliche Museen, Ostasiatische Sammlung

Red foot ring, wide rimmed bowl Decoration of plum blossom and birds cut from the red overlay

China, c 1950

176 Decorated bottle

Opaque white glass with red cut overlay
Height 19 5 cm
Hamburg, Museum fur Kunst und Gewerbe

Mallet shaped vessel On the body, a dragon flying over water On the neck, clouds and bats in flight

China 18th Century

Reference Martin Feddersen, *Chinesisches Kunstgewerbe*, Berlin 1939 fig 154

177 Snuff bottle

Opaque whitish glass with red cut overlay
Height 10 5 cm
Hamburg, Museum fur Kunst und Gewerbe

Round, laterally flattened bottle with small foot ring, short neck, and hemispherical stopper The decoration, on a dull white background, consists of the creatures of the zodiac On the neck, simple foliage decoration

China, 18th Century

Reference Martin Feddersen *Chinesisches Kunstgewerbe* Berlin 1939 fig 155

178 Snuff bottle

Colourless glass with painting on inner surface
Height 9 5 cm
Berlin, Staatliche Museen Ostasiatische Sammlung

Shallow foot ring rounded bottle with short neck The front view shows two riders

China, 18th Century

179 Tall vase

Dark purplish glass with gold mount on rim
Height 36 5 cm
Berlin, Staatliche Museen, Ostasiatische Sammlung

Baluster shaped vase without decoration Tall vase with rounded shoulders and short wide neck

China, 18th Century (Ch'ien lung period)

180 Vase of cut overlay glass

Colourless, wine red and yellow glass, with deep and shallow cutting, engraving and acid etching respectively
Height 32 cm
Leipzig, Museum des Kunsthandwerks

Tall, curved vase with rim folded inwards Decoration pansy leaves and flower in the lower region, in dark colours on a deep wine red background A lightening of the colours *towards the middle into yellowish tones on a white back* ground Pale wine red background in the upper part Signed Galle

France, Émile Gallé, Nancy, c 1900

181 Vase with clematis-flowers

Yellowish green and brownish purple glass
Height 13 5 cm
Halle, Staatliche Galerie Moritzburg

Heavy rounded foot, slender vase with small opening Clematis flower and leaf decoration

France, Émile Galle, Nancy, c 1900

182 Vase of cut overlay glass

Multi coloured overlay glass
Height 64 cm
Owned by Klaus Beyer, Weimar

Wide, hollow foot, truncheon shaped vase, shouldered and with a short neck Decoration lake landsape at dusk with *tall trees Foot black, trees dark brown sky yellow to* reddish, landscape in shades of green Signed 'Daum Nancy'

France, Daum freres, Nancy, c 1900

183 Vase with inlaid and trailed thread decoration

Opaque blue, green and purple iridescent glass, red inner surface showing through
Height 9 5 cm
Leipzig Museum des Kunsthandwerks

Footless, squat bulbous vase with short smallish neck Thread inlay in spiral patterns Trailing in a twig like design Signed underneath 'L C T"

U S A , Louis Comfort Tiffany, New York, c 1900

184 Onion shaped vase

Red, yellow and brown glass
Height 34 cm
Hamburg, Museum für Kunst und Gewerbe

Small onion shaped body and long neck, widening gradually into a flower shaped opening

185 Tulip shaped glass

Coloured glass, made at the lamp
Height 32 cm
Hamburg, Museum fur Kunst und Gewerbe

Stem in blue glass with spiral twist in the middle Two lanceolate leaves in copper green glass attached to stem Tulip shaped bowl with metallic surface produced by lustre flashing Signed on the thin foot "C Kopping"

Germany, Karl Kopping, Berlin, c 1900

Reference Compare similar glasses in Gustav E Pazaurek, *Moderne Gläser*, Leipzig without date fig 2

186 Bowl with inward curving rim

Purple and green lustre glass with trailed decoration
Diameter 20 cm
Leipzig, Museum des Kunsthandwerks

Rounded bowl with slightly projecting base and wavy rim

Bohemia, manufactured by Josef Pallme, Steinschönau, c 1900

187 Beaker with Broncit decoration

Colourless glass, acid etched
Height 10 cm
Prague, Národní Galerie

Cylindrical beaker divided into 27 equal zones, each containing a medallion with stylised flowers

Vienna, Josef Hoffmann, 1912

References Gustav E Pazaurek, *Kunstgläser der Gegenwart* Leipzig 1925, p 155 A S Levetus, *Art and crafts at the Austrian Museum for Art and Industry Vienna* *The Studio*, London Vol 55 fig p 32

188 Bowl with Broncit decoration

Clear glass, cut and acid etched
Height 8 cm
Prague, Narodní Galerie

Many sided bowl, basically oval in shape, with straight walls and decorated with a geometrical pattern and medal lions showing various animals

Vienna J and L Lobmeyr, designed by Urban Janke, Blottendorf, 1912

189 Tumbler

Lead crystal glass, facet cut
Height 12 cm
Leipzig, Museum des Kunsthandwerks

Conical tumbler with six facet cut sides, hexagonal base, and round rim

France, Cristalleries de Baccarat, c 1900

190 Glass sculpture – hyaloplastic – (Resting Ox)

Lead crystal glass, moulded and cut
Length 15 cm
Leipzig, Museum des Kunsthandwerks

The ox, its head inclined towards the left, rests on a rectangular base

France, Cristalleries de Baccarat, 1927

191 Tall bowl

Yellow
Height 18 cm
Leipzig, Museum des Kunsthandwerks

Small, thick foot ring and tall curved bowl The apparent impurities in the glass are intentional, the aim being to produce a vessel of antique appearance

England, J Powell & Sons Ltd , London, 1927

References *Europäisches Kunstgewerbe 1927 Berichte über die Ausstellung*, published by Stadtisches Kunstgewerbemuseum zu Leipzig, Leipzig 1928, fig 96

192 Vase

Sea green
Height 25 cm
Leipzig, Museum des Kunsthandwerks

Slightly concave ground base, tall, curved body, mould-blown to produce a scale like pattern, and wide rim

England, J Powell & Sons Ltd , London, 1927

193 Beaker-shaped vase

Pale green glass
Height 12 cm
Leipzig, Museum des Kunsthandwerks

Solid foot, bowl widening upwards, the wall becoming thinner towards the rim Marked "Orrefors F V 1742" on the base

Sweden, Orrefors Glasbruk A B , Orrefors, 1937

194 Wine glass

Smoke coloured glass
Height 23 5 cm
Leipzig, Museum des Kunsthandwerks

Wide conical foot drawn upwards into a stem, bell shaped bowl Leaf decoration melted on to the lower part of the bowl, the stalk twisted round the stem

Sweden, Orrefors Glasbruk A B , Orrefors, 1930

195 Tall bowl with dancing maidens

Pale blue glass with unpolished cutting
Height 16 cm
Leipzig, Museum des Kunsthandwerks

Foot smaller than base of bowl Bowl slightly bell shaped, engraved with angel performing act of sacrifice and dancing maidens with veil draperies On foot and rim friezes of acanthus like leaves Marked ' Orrefors Simon Gate 310 " 1927 H Bayer

Sweden, Orrefors Glasbruk A B , Orrefors 1927

196 Bowl with matt surface

Colourless glass
Height 9 5 cm
Leipzig, Museum des Kunsthandwerks

Hemispherical bowl with small cut foot ring The external surface is cut in such a way as to obtain a semi matt appearance, and strewn with fully matt engraved spots Signed ' H M " on the foot

Germany, Hanns Model, 1937

197 Shallow bowl depicting John the Baptist

Lead crystal with cutting in deep relief
Diameter 28 5 cm
Leipzig, Museum des Kunsthandwerks

Bowl of thick glass with very deep cutting executed on the underside, polished and unpolished, representing John the Baptist Signed ' XXVI RS "

Germany, Richard Sussmuth, 1926

Reference *Europaisches Kunstgewerbe 1927 Berichte uber die Ausstellung*, published by Stadtisches Kunstgewerbemuseum Leipzig Leipzig 1928 fig 47

198 Shallow bowl with cut motif

Lead crystal glass
Diameter 31 cm
Leipzig, Museum des Kunsthandwerks

Thick glass Kneeling woman cut into the underside

Stuttgart, Kunstgewerbeschule, Klasse Wilhelm von Eiff executed by Hans Klein 1927

Reference Compare similar piece in *Europaisches Kunstgewerbe 1927 Berichte uber die Ausstellung* published by Stadtisches Kunstgewerbemuseum Leipzig Leipzig 1928 fig 73

199 Bottle and Decanter

a) Mould blown "Washington bottle'
Green glass with mould blown decoration
Pint size
Corning New York, The Corning Museum of Glass

Flat oval bottle with short neck The mould blown decoration shows the American eagle surrounded by sunrays the motto *E Pluribus Unum*, and the letters T W D (Timothy W Dyott, a self styled doctor' or patent medicine man who went into glass making to keep himself supplied with medicine bottles) On the reverse a portrait of General Washington with name inscribed above On the narrow side of the bottle the names Adams and Jefferson July 4 A D 1776 (a patriotic reference to the fact that Adams and Jefferson died exactly half a century after the signing of the Declaration of Independence)

North America, Philadelphia Kensington Glassworks, 1826–1833

b) Mould blown decanter
Colourless glass
Height 25 7 cm
Corning, New York, The Corning Museum of Glass

The moulding techniques in this decanter are of particular interest The vertical ribbing was achieved by pattern moulding The glass was then blown into a full size mould to achieve the sunburst and diamond diapering Extra vertical ribbing was obtained by a blow three mould" technique Spiral ribbing has been applied around the neck

Eastern North America, c 1820–1835

200 Jug

Colourless lead glass
Height c 25 cm
Corning, New York, Steuben Glassworks

A martini or water jug designed and manufactured for sale by Steuben The handle is formed of two crystal loops converging at the deeply sheared rim The Steuben number is 8077

USA, Steuben Glassworks Contemporary piece, still in production

201 Flower bowl

Steel blue glass with cut decoration
Diameter 17 cm
Eisenach Thuringer Museum

Thick walled bowl standing on narrow polished foot Rounded rim with cut fishbone decoration

Germany, Oberlausitzer Glaswerke, Entwurf Wilhelm Wagenfeld, 1951

Reference *Oberlausitzer Glaswerke Catalogue* Weisswasser 1951 p 42 No 4404 1

202 Urn shaped vase

Steel blue glass
Height 56 cm
Leipzig, Museum des Kunsthandwerks

Wide shouldered urn shaped vase with flat handles applied

Germany, Oberlausitzer Glaswerke, designed by Wilhelm Wagenfeld, 1940

Reference Fritz E Hellwag *Wilhelm Wagenfeld Werkstattbericht 4* published by Kunst Dienst, Berlin 1940 fig p 23

203 Ewer

Pale blue glass
Height 25 cm
Leipzig, Museum des Kunsthandwerks

Rounded body applied footring, short slender neck opening into a flattened lip Tall curving handles Signed underneath 'Venini Murano"

Italy, design by Paolo Venini, Murano, 1937

204 Bottle with matt surface

Greyish blue glass with ground surface

Height 27 cm

Munich Die Neue Sammlung

The bottle is angular in line with wide shoulders and short neck Ball stopper

Italy, design by Paolo Venini, Murano, 1958

205 Flask in the *filigrana* technique

Amethyst coloured *filigrana* and colourless glass

Height 40 cm

Munich, Die Neue Sammlung

Tall tear shaped bottle with *latticino* decoration Base in clear glass Acorn shaped *latticino* decorated stopper

Italy, design by Paolo Venini, Murano 1959

Reference *Glass 1959 The Corning Museum of Glass Exhibition Catalogue* Corning, New York 1959 fig 192

206 *Fazzoletto* bowl in the *sanfirico* technique

Colourless glass with white interlaced *latticino* work

Height 27 cm

Munich Die Neue Sammlung

Footless bowl with irregular folding *Latticino* bands in two patterns

Italy, design by Paolo Venini Murano, 1952

Reference *Glas der Gegenwart – Baccarat Orrefors Venini Gläser der Sammlung August Warnecke Hamburg* Exhibition Catalogue essay by P W Meister Hamburg, without date fig p 47

207 Multi coloured vase

Colourless, light brown and steel blue glass with matt surface

Height 14 cm

Munich Die Neue Sammlung

Italy, design by Paolo Venini, Murano 1958

208 Shouldered bottle with matt surface

Dark moss green glass with colourless overlay and matt surface

Height 42 cm

Munich, Die Neue Sammlung

Thick glass tall shapely bottle with sloping shoulders and chimney shaped neck

Italy, design by Paolo Venini, Murano, 1958

209 Large bowl

Purplish lead crystal glass

Diameter 50 cm (base elliptic)

Munich, Die Neue Sammlung

Italy, Ernesto Seguso, designed by Flavio Poli, Murano, 1958

Reference Similar bowl *Glass 1959 The Corning Museum of Glass Exhibition Catalogue* Corning New York 1959 fig 182

210 Four-coloured vase

Colourless, violet blue and green glass

Height 34 cm

Munich, Die Neue Sammlung

The vase is elliptical in cross section

Italy, Ernesto Seguso, Murano Designed by Flavio Poli, 1958

References Gio Ponti *Alta fedeltà Gläser von Flavio Poli*, in Domus Mailand 1964 410 p 50–52 Hans Heilmaier *Kunstgläser aus der Manufaktur Ernesto Seguso nach Entwürfen von Flavio Poli Die Kunst und das schöne Heim* 54 München 1956 p 300–303

211 Squat bottle of speckled glass

White, grey and blue glass

Height 14 3 cm

Munich, Die Neue Sammlung

Squat cylindrical bottle with rounded base and shoulders Short, broad neck and thick, ring like rim

Holland, N V Koninklijke Nederlandsche Glasfabriek, Leerdam, 1959

212 Bowl in mosaic-glass

Colourless, dark brown, blue and white glass

Diameter 12 5 cm

Munich Die Neue Sammlung

Italy, design by Paolo Venini, Murano, 1958

213 Vase with air-bubble decoration (Ariel glass)

Colourless and dark purplish glass

Height 16 4 cm

Hanover, Kestner Museum

Tear shaped vase in purplish glass with colourless overlay thickened at the base Decoration in ariel technique (control of air bubbles to form design), of a man serenading in a gondola with star motifs girl s head and flowers

Sweden Orrefors Glasbruk A B, Orrefors designed by Edvin Öhrstrom, 1957

214 Flower vase with overlay reticulated pattern

Greyish green and colourless glass

Height 20 cm

Hanover, Kestner Museum

Tear shaped vase, with inlaid *latticino* work Thick plain foot

Sweden, Orrefors Glasbruck A B , Orrefors designed by Sven Palmquist, Orrefors, 1953

Reference *Venini Murano und Orrefors-Schweden Kestner Museum Hannover, Exhibition Catalogue* edited by Christel Mosel, Hannover 1957, cat No 171

215 Bottle with two superimposed layers

Greenish grey and colourless glass
Height 24 cm
Hanover, Kestner Museum

Tear shaped vase with long neck and thick overlay, extremely thick round body and base Rim smoothed at the furnace Flat base

Sweden, Orrefors Glasbruk A B , Orrefors, designed by Nils Landberg, Orrefors, 1956

References *Venini Murano und Orrefors-Schweden, Kestner Museum Hannover, Exhibition Catalogue* edited by Christel Mosel Hanover 1957 cat No 132

216 Slender vase

Colourless vase, acid etched matt surface
Height 31 cm
Munich, Die Neue Sammlung

Round foot, long stem widening slightly towards the top, bowl of exaggerated tulip shape

Sweden, Reijmyre Glasbruk, Reijmyre, 1958

217. Water set

Colourless and smoke coloured glass
Munich, Die Neue Sammlung

Jug the shape resembles two cylinders, the smaller one forming the top half and drawn out into a lip Applied handle, round in cross section High projecting kick Glasses again double cylinder shape, the larger one this time forming the upper part

Finland, Notsjo Glasbruk, Notsjo, 1958, designed by Kaj Franck

218 Bottle

Red and manganese coloured glass
Height 20 cm
Munich, Die Neue Sammlung

Bottle of exotic shape with lower part cylindrical central part bulbous and tall neck with widening rim Large ball stopper

Finland, Notsjo Glasbruk, Notsjo, 1959

219 Two cylindrical vases

Amethyst coloured, dark blue and colourless glass, double-cased
Heights 17 5 and 30 cm

Munich Die Neue Sammlung

The upper half mirrors the lower part in each vase, dividing "floor" in colourless glass

Finland, Karhula Iittala Glasbruk, designed by Timo Sarpaneva, 1957

Reference *Glas Gebrauchs und Zierformen aus vier Jahrtausenden, Die Neue Sammlung, Munich Exhibition Catalogue,* 1959 No 95 and 96 with fig

220 Vase

Dark steel blue glass
Height 17 cm
Munich, Die Neue Sammlung

Double conical shape, thick glass Opening smoothed at the furnace

Denmark, Holmegaards Glasværk, Holmegaard and Copenhagen 1959

221 Brandy bottle in the style of a Kuttrolf

Light greenish blue glass with clear glass stopper
Height 26 5 cm
Leipzig, Museum des Kunsthandwerks

Footless vessel, its upper and lower parts linked by five pincered tubes Short neck with flat rim Ball stopper

Denmark, Kastrup Glasværk, Copenhagen, 1960

222 Two cylindrical vases

Dark bluish green, rather transparent green
Height 37 cm
Munich Die Neue Sammlung

Denmark, Holmegaards Glasværk, Holmegaard and Copenhagen, 1958

223 Bowl

Lead crystal glass
Diameter 27 cm
Munich *Die Neue Sammlung*

Wide bell shaped bowl with thick foot

England, J Powell & Sons Ltd , London, 1958

224 Dish

Light steel blue glass
Diameter 32 cm
Munich, Die Neue Sammlung

Thick foot, body small in diameter widening gradually Very wide rim with the edge curving inwards

Holland, N V Kononklijke Nederlandsche Glasfabriek Leerdam, 1958

225 Vase

Glass with marbled effect
Height 17 cm
Munich Die Neue Sammlung

Footing in coloured glass cylindrical vase of light and dark mottled glass with enclosed air bubbles and irregular stripes

Holland N V Kristalunie Maastricht 1958

226 Parts of a drinking service

Colourless very thin blown glass
Height carafe 29 5 cm wine glass 18 5 cm
Munich Die Neue Sammlung

Compressed cylindrical carafe on slender stem and flat foot with tall neck and stopper with thread like finial and tiny ball Wine glass on a slightly wide foot very tall thin stem and with flattish conical bowl Carafe executed after a design by Oswald Haerdtl Vienna dating from 1924 Wine glass designed by Stefan Rath Vienna 1954

Austria Glasmanufaktur J & L Lobmeyr Vienna

Reference Robert Schm dt, *100 Jah e ö erre h sche Glaskunst* V enna 1925 plate 28 S efan Rath *Lobmeyr* V enna 1962

227 Vase

Steel blue glass cut
Height 32 cm
Prague Narodni Galerie

Tall vase with convex silhouette cut in a flat plane in front and behind Extremely thick glass with a very narrow opening and ground top

Czechoslovakia Borske sklo glass house Novy Bor designed by Pavel Hlava 1959 (Prof Pavel Hlava born 1924 trained at the Prague College of Applied Arts now employed by the Institute for Household Design Prague)

Exh b tion Catalogue ed ted by Alene Adlerová, Le pz g 1964 No 21

228 Two layer vase

Purple glass with blue overlay
Height 50 cm
Prague Narodni Galerie

Slender two bulbed vase

Czechoslovakia Borske sklo Glashutte Chribska designed by Josef Hospodka 1960 (Prof Josef Hospodka born 1923 trained at the Academy of Appl ed Art Prague is Director of the School for Apprentices at the Chribska Glassworks)

Reference *T che boslowakisches Glas Museum des Kun thandwerks Leipzig Exhibit on Catalogue* essay by Alena Adlerová, Le pzig 1964, No 50

229/230 Plate with sand blast engraving

Lead crystal glass
Diameter 36 2 cm
Prague Narodní Galerie

Plate with slightly raised rim Grill like decoration The cuts are about 10 mm deep

Czechoslovakia designed and executed by Ladislav Oliva 1959

References *Tschechoslowakisches Glas Museums des Kunsthandwerks Leipzig Exh b tion Catalogue* essay by Alena Adlerová, Le pz g 1964 No 60 *Glass 1959 The Corn ng Museum of Glass Exh b t on Catalogue* Corning New York 1959 fig 34

231 Vase decorated with sand blast engraving

Lead crystal glass
Height 34 cm
Prague Národní Galerie

Tall straight sided vase narrowing slightly towards the top Deep central band of decoration consisting of irregular ribbon like motifs running vertically

Czechoslovakia Ladislav Oliva 1960

Reference René Roubíček *Ladislav Ol va* in *Tschechoslowakische Glasrevue* XIX, Prag 1964 No 9 p 274 77

232 Glass sculpture

Colourless glass with light brown prunts
Height 24 cm
Prague Narodni Galerie

Sperical body with small prunts and eight hollow tentacle like appendages Free hand work

Czechoslovakia National Glasswork Borske sklo Novy Bor design by Rene Roubicek 1960 (Prof Rene Roubicek born 1922 received his artistic training at the Academy of Applied Arts in Prague he is now chief supervising artist at the glassworks Borke sklo)

233 Lustre decorated vase

Colourless glass with blue and red lustre decoration
Height 27 cm
Prague Narodní Galerie

Lustre painting on the cylindrical body depicting grotesque bird forms

Czechoslovakia Franticek Tejml 1960

Refe ence *Ts he ho lowakis hes Glas Mu eum des Kuns handwerks Leipzig, Exhib on Ca alogu* essay by Alena Adlerová Le pz g 1964 No 79

234 Vase with engraved line pattern

Colourless glass
Height 21 5 cm
Prague Narodní Galerie

The network design is composed of thin horizontal vertical and diagonal lines

Czechoslovakia Jiri Harčuba Prague 1960

235. Hollow bowl with deep facetting

Lead-crystal glass
Diameter 45 cm.
Prague, Národní Galerie

Irregularly shaped bowl with deep irregular facetting.

Czechoslovakia, Borské sklo, Nový Bor, design by Miluše Roubíčkova, 1958.

Reference: *XII Triennale di Milano 1960, Esposizione Cecoslovacca, Exhibition Catalogue*, No. 240; *Tschechoslowakisches Glas, Museum des Kunsthandwerks Leipzig, Exhibition Catalogue*, essay by Alena Adlerová, Leipzig 1964, fig. 5.

236. Jug

Smoke-coloured glass
Height 13.5 cm.
Munich, Die Neue Sammlung

Squat round jug with slightly flared mouth, horizontal rim, small spout and prominent handle.

Germany, Glashütte Theresienthal, design by Karl Baumann, 1958.

237. Tall jug

Brown glass
Height 22.3 cm.
Munich, Die Neue Sammlung

Barrel-shaped jug with slanting rim and upward-curving spout, balanced by a sturdy handle.

Germany, Gralglashütte, Dürnau-Göppingen, design Heinrich Löffelhardt, 1954.

Reference: Bernhard Siepen, *Gralglas – ein Leistungsbegriff*, in: *Die Kunst und das schöne Heim*, 55, Munich 1957, p. 34–37.

238. Vase in alabaster-like metal

Lamp-blown glass
Height 15 cm.
Leipzig, private collection

Flattened base, tall diabolo-shaped vase.

Germany, designed by Ilse Decho, Leipzig, 1960.

239. Vase with cut decoration

Bluish-green glass with colourless casing
Height 20,8 cm.
Leipzig, Museum des Kunsthandwerks

Cylindrical in shape with wedge-shaped cutting forming window-like pattern.

Germany, Ilse Scharge-Nebel, Halle, 1964. (Ilse Scharge-Nebel, born 1904, trained at the Akademie für Kunstgewerbe, Dresden, working in Halle (Saxe-Anhalt) as artist in glass).

References: *Kunsthandwerk im Grassimuseum 1965, Museum des Kunsthandwerks Leipzig, Exhibition Catalogue*, publ. by Fritz Kämpfer, Leipzig 1965, Plate 84. Collection of writings on I. Scharge-Nebel: *Ilse Scharge-Nebel, Otto Scharge, Günther Laufer, Museum des Kunsthandwerks Leipzig, Exhibition Catalogue*, publ. by Fritz Kämpfer, Leipzig 1963.

240. Table glasses

Colourless glass
Height 12 cm.
Weimar, Hochschule für Architektur

A set of five glasses of equal height, each having slim bowl tapering to rounded bottom, slender, stem.

Germany, designed by Horst Michel, Weimar, 1964 (Professor Michel is director of the Institute of Interior Decoration in the School of Architecture at Weimar).

241. Blue glass vase with colourless insertions

Lamp-blown glass
Height 29.5 cm.
Leipzig, Museum des Kunsthandwerks

Tall cylindrical vase in eight sections, each section separately blown. Decorated with an abstract ribbon-like pattern running horizontally.

Germany, Albin Schaedel, Arnstadt 1962.

Reference: *Kunsthandwerk im Grassimuseum 1964, Museum des Kunsthandwerks Leipzig, Exhibition Catalogue*, edited by Fritz Kämpfer, Leipzig 1964, fig. 21.

242. Table glasses

Colourless and light grey glass
Height 7 to 13 cm.
Munich, Die Neue Sammlung

Heavy colourless foot in each case and simple curved bowl.

Germany, Gralglashütte Ltd., Dürnau-Göppingen, 1959.

243. Drug jars

Green and brown glass
Height 22 cm.
Munich, Die Neue Sammlung

Germany, Vereinigte Farbglaswerke Zwiesel, design by Heinz Löffelhardt, 1958

List of Museums

Glossary

ACID ETCHING to make the surface of glass matt by treating it with a mixture of potassium fluoride and hydrochloric acid (e g 100 parts of water, 10 parts of potassium fluoride and 1 part hydrochloric acid) The parts not to be affected are covered up with wax paraffin or colophon, a graded etching can also be achieved The invention of this technique has been doubtfully ascribed to Heinrich Schwanhardt (q v) There is a Nuremberg glass panel with an acid etched inscription dated 1686
Since Egermann (q v) the so called colour etching technique was used in Bohemian glass a thin layer of coloured glass different from the one of which the vessel was made was applied to the outer surface (flashing or casing), which was then etched so that the subject of the etching appeared in clear glass

AGATE a precious stone, often with curious markings or with colours in layers or bands Imitated in glass and known as *Schmelzglas* or sometimes as 'calcedonio glass'

AGRICOLA (Latinised from of the original *Bauer*) GEORG born in Glauchau Saxony on March 24th, 1490, and died at Chemnitz on November 21st 1555 In the course of his life he was headmaster in Zwickau physician in the Joachimstal, and Mayor of Chemnitz He is acknowledged as the father of mineralogy his most famous work being *De re Metallica, libri XII* a treatise on mining and metallurgy published at Basle in 1556 The twelfth book deals with glass and contains descriptions of different manufacturing techniques

Reference Georgius Agricola *Zwolf Bucher vom Berg und Huttenwesen* transcribed into modern German by Carl Schiffner Dusseldorf 1953

ALABASTRON ancient Egyptian cylindrical vessel with a rounded base and a broad rim Two small handles were used for a chain or a string Originally made of alabaster, it was used for cosmetic purposes, but was later exclusively used for putting into graves as provision for after life [Fig 4]

ALTARE Italian glasshouse near Genoa founded probably in the XIth Century always a rival of Venice Whereas the emigration of glass makers was regarded as a severe crime at Murano and punished as such, the Altarists had to work abroad temporarily, as it was laid down in the constitution of their *Universita dell arte vitrea* in 1495 They founded glass works in France and in the Netherlands Thus indirectly they caused the rapid spread of the *façon de Venise*, especially since one has to assume that among them were numerous glass makers who originally came from Murano

Reference Giovanni Mariacher *Edle Glaser von der Antike bis Murano* Munich 1962

AMERICAN GLASS The first glasshouse in the United States of America was founded in Jamestown, Virginia in 1608, but did not exist for very long The actual development starts with the foundation of both glassworks in Wistarburg in New Jersey by the German Caspar Wistar in the middle of the eighteenth Century, and in Manheim in Pennsylvania by the German Heinrich Wilhelm Stiegel towards the end of the same century In both places a European influence prevails, although in a simpler and utilitarian way Especially the everyday glasses of the Wistar works determine the American utility style In the first half of the nineteenth century, in about 1827, the celebrated dip moulded glass, best seen in bottles, was succeeded by pressed glass Tiffany s experiments (q v) strongly influenced Europe, especially Germany, Bohemia and Austria Recently a tremendous search for new possibilities in the art of glass making has been evident everywhere, especially in the fields of glass sculpture and the production of mosaic glass [Figs 157, 170, 171, 183, 184]

Reference *Amerikanisches Glas aus drei Jahrhunderten* Exhibition arranged by the Amerikahauser in Germany; catalogue published by the Corning Museum of Glass, Corning New York, 1955 McClinton, *American Glass* Cleveland 1950 McKearin, *American Glass* New York 1941

AMPHORA Ancient vessel for wine or oil The form was first created in Egypt but later developed to its utmost refinement in Greece It consists of a flat base and a slightly shouldered body, connected by two handles with a wide neck which is crowned by a distinct rim The vessel is widest in the upper third In its rational structure and graceful shape the amphora exemplifies the classical vessel [Figs 3 6, 29]

ANCIENT GLASS From the beginning of glass making to about the fifteenth century A D It comprises glass from Egypt, Mesopotamia Babylon, Syria, Rome and the Rheno Romanic glass up to the onset of Frankish culture in the west and Islamic culture in the east

References Anton Kisa, *Das Glas im Altertume* 3 Vols., Leipzig 1908, Federic Neuburg *Antikes Glas* Darmstadt 1962 Ancient glass technique William E S Turner *Die Leistungen der alten Glasmacher und ihre Grenzen* in *Glastechnische Berichte* Frankfurt a M 30 Vol. 7 pp 257–265 (1957) Waldemar Haberey *Der Werkstoff Glas im Altertum* in *Glastechnische Berichte* Frankfurt a M 30 Vol 12 pp 505 509 (1957) and 31 Vol 5 pp 188 194 (1958)

APOSTLE GLASS Enamelled *humpen* (q v) depicting the twelve Apostles They were inspired by contemporary ceramic productions especially the Kreussen *Apostelkruge*, and were in use in Germany from the end of the sixteenth into the seventeenth Century

ARIELGLASS Manufacturer's name for two layered glass embellished by figure like air bubbles The technique was invented by Edvin Öhrstrom of the Orrefors Glassworks in Sweden [Fig 213]

ARYBALLOS Ancient Greek globular bottles for cosmetic oils and balms The small bottle, usually made of clay, was intended for daily use and carried around suspended on a string or chain

AVENTURINE GLASS Glass with inclusions of glittering metallic particles It was made in Venice in the seventeenth and eighteenth centuries and the process was kept secret The particles consist of metallic copper which is chemically produced when forge scales and copper-oxide are added to the glass mixture Pettenkofer re invented the process during the second half of the nineteenth century

BACCARAT French town in the department Meurthe et Moselle, site of the glassworks *Compagnie des Cristalleries de Baccarat, Paris* The foundation of the first glasshouse was laid in 1765 Since 1816 it has been owned by d'Artiques They produce lead-crystal in the English fashion The glasshouse is still one of the leading French glass manufacturers [Fig 189 190]

Reference: James Barrelet *La Verrerie en France* Paris 1953 *Glas der Gegenwart Baccarat Orrefors Venini* Exhibition catalogue edited by August Warnecke, Hamburg, without date

BALSAMARIUM Ancient small container, usually in the form of a bottle, for cosmetics, balms, or fragrant oils Because they were often found in tombs they were popularly termed tear bottles Special forms of balsamaria are the amphora (q v) Lekythos (q v), Aryballos (q v) Alabastron (q v) Twin balsamaria are often to be found, they are usually looped or handled [Figs 4 14]

BEADS They were of importance in ancient glass making and originated in Egypt From the time of the VI Dynasty spirally twisted polychrome beads had been known Beads were also made in Tell el Amarna Since about 1000 B C, the so called eye beads had been made, after the seventh century B C beads with zig zag patterns appear, the so-called mask beads were made after the fifth century B C, and millefiori beads came into being after the third century B C. Aggrybeads are many layered short ribbed glass canes the ends of which were obliquely cut, thus producing a fancy zig zag pattern

The age-old manufacture of beads was brought to life again by the glass makers of Venice During the Biedermeier period, small cylindrical beads were employed in making embroidered miniature mosaics Later, in the nineteenth century, short tube shaped beads (bugle beads, German *Schmelzperlen*) were in fashion, they were also used for making curtains later in the *Jugendstil* period [Fig 5]

Reference Frederic Neuburg, *Antikes Glas* Darmstadt 1962 Gustav E. Pazaurek *Glasperlen und Perlenarbeiten aus alter und neuer Zeit* Darmstadt 1911

BEINGLAS Semi opaque white glass produced by adding the ashes of calcined bones to the mixture Mainly of Bohemian and Thuringian manufacture, it was produced in large quantities in the second half of the eighteenth and the first half of the nineteenth century, largely influenced by porcelain This opaque glass was usually decorated by enamel pigment In Bohemia it was often cased and cut Beinglas is not identical with the so called milk glass, the Italian *lattimo* or *latticino*, the colouring of which results from tin oxide This has been produced in Venice since the sixteenth century *Beinglas* is, however, related to the so-called opal glass, which is also made with the help of bone ashes or hartshorn, the degree of opalescence depends on the ratio of ingredients in the glass mixture Anton Neri (q v) has described how to make a peach blossom coloured opal glass

BERKEMEYER Dutch drinking glass of the seventeenth century Similar to the *Römer* but with a cylindrical lower part and a bulging bowl

BIEDERMEIERGLÄSER German and Bohemian glasses peculiar in style to the first half of the nineteenth century Partly influenced by the heaviness of English lead glasses, the form, especially the feet becomes bold and massive In the beginning of the period facetting is predominant Later a subtle and refined form of engraving flourishes (Dominicus Bimann, q v) Along with it coloured glass becomes fashionable Hyalith glass, (q v) Lithyalin (q v), surface staining (q v), etc Entirely new types of glasses came into being e g Friendship glasses commemorative glasses, *Badegläser* etc (v Kothgasser, Mohn) [Figs 162 – 168]

Reference Hermann Trenkwald *Gläser der Spätzeit (um 1790 1830)*, Vienna 1923 Gustav E. Pazaurek, *Gläser der Empire- und Biedermeierzeit* Leipzig 1923

BIMANN, DOMINIC Bohemian glass engraver, born at Neuwelt in the Bohemian part of the Riesengebirge in 1800 died 1857 He is the most important engraver of the Biedermeier period His outstanding merit rests in his achievements in portrait engraving Unlike the miniature painters, he executed his commissions mainly in the famous spas of Western Bohemia, especially at Franzensbad where he took up residence during the watering season Therefore his glasses are widely scattered, and many of his works went to Russia Characteristic objects of the crafts of the Biedermeier period are engraved roundels executed by him

Reference Gustav E. Pazaurek *Gläser der Empire- und Biedermeierzeit* Leipzig 1923 Julius Streit and Otto Lauer *Dominik Bimann Lebensbericht und Meisterarbeiten des besten Porträtgraveurs* Schwäbisch Gmünd 1958

BLANKÄTZUNG Method of polishing crystal glass with a chemical solution This is deeper than polishing by hand The solution consists of one part hydrochloric acid, one part water and two parts sulphuric acid

BOHEMIAN AND SILESIAN GLASSMAKING The art of glassmaking in Bohemia reached a climax after the invention of potash lime glass around the year 1685 It was allegedly invented by Michael Muller, a master craftsman at the glasshouse of Winterberg in South West Bohemia It flourished until the middle of the eighteenth century
To distinguish properly between Silesian and Bohemian glass making is hardly possible, since the areas overlap

It started with goblets, engraved in high relief, from the Hirschberg Valley in Silesia from about 1680 until 1690 At the turn of the century the Bohemian goblets with facet -cutting and flower and fruit ornamentation take the lead They again are succeeded by Bohemian wine glass shaped goblets with a delicate formal foliage decoration After 1725 the Silesian side of the Riesengebirge dominates the scene with goblets, the decoration of which begins with heavy formal foliage and gradually develops into the *rocaille*

Flanked by these ornaments, scenes, towns or landscapes are depicted Besides goblets, sweetmeats in the shape of small boats were made The period between 1680 and the middle of the nineteenth century is also marked by the flourishing Bohemian glass trade, in many places all over the globe Bohemian glass companies were established [Figs 148–150 160, 161]

Reference Edmund Schebek, *Bohmens Glasindustrie und Glashandel* Prague 1878 J R. Vavra, *Das Glas und die Jahrtausende* Prague 1954

BRANDENBURG GLASS The main Brandenburg glass houses were Krimnitz, Marienwalde, Drewitz, Potsdam, and Zechlin Until the beginning of the seventeenth century Brandenburg depended on the import of glass from Bohemia, Saxony, Thuringia and Schleswig Holstein In 1602, under the patronage of the Elector Joachim Friedrich, the first Brandenburg glasshouse was founded near Krim nitz It was moved to Marienwalde in the year 1607 where it existed till 1825 From 1653 to 1792 there existed a second glasshouse at Krimnitz These early Brandenburg glass houses usually produced drinking glasses, window panes and enamelled glass The products were very similar to Bohemian glass, since the craftsmen were recruited from Bohemia With the foundation of the Potsdam glasshouse near Drewitz by the Elector Friedrich Wilhelm in 1674, begins the really important period of glassmaking in Bran denburg (see Potsdam) [Fig 154]

Reference Robert Schmidt, *Brandenburgische Glaser*, Berlin 1914

BRONCIT DECORATION A method of glass decoration with a blackish matt paint application usually in geometrical patterns, designed by Josef Hoffmann (q v) around 1910, and executed by the Viennese glass manufacturers Lob meyr (q v) This decoration forms one of the elements of the style of the Wiener Werkstatte (Vienna Crafts Centre) [Figs 187, 188]

BUTZENSCHEIBE = BULL'S EYE GLASS Palm sized flat glass disc with a central boss (the bull s eye) on one side, produced by rapid rotation of an opened glass sphere on the iron in the furnace

BYZANTINE GLASS Glass from Constantinople (Byzan tium) continuation of the tradition of the ancient art of glass making and further development of some branches of it e g the decoration of glass in gilt and enamel pigment Also noteworthy are Byzantine glass mosaics The Em peror Constantine decreed in 337 A D that glass makers (*vitriarii*) were to be exonerated from all public duties In the sixth century A D numerous Jewish glassmakers lived in Constantinople The Venetian art of glass making was strongly influenced by Byzantine glass After the conquest of Constantinople in 1224 Byzantine glass makers worked in Venice

Reference Frederic Neuburg, *Antikes Glas* Darmstadt 1962

CÁNTARO Spanish, special vessel with an apical circular handle and two spouts pointing in opposite directions, one short and wide for filling the vessel, and one long, slightly curved and tapering for pouring out the liquid In use from the seventeenth to the nineteenth century [Fig 93]

CASED OR FLASHED GLASS The superimposing of a layer of contrasting coloured glass onto the glass bubble before blowing In ancient glass this was only a preliminary to the cameo carving executed on the vessel, and not a decorative technique in itself The outer coloured layer was cut away to produce a relief pattern, and the skilful craftsman was able to achieve an effective gradation of tone The technique of cameo carving cased glass was developed to its height in Alexandria and Rome during the time of the Roman Empire The craftsman has in many cases attempted to reproduce the effects of layered gem stones, such as onyx The Port land Vase is a supreme example of this technique

The cutting was much simplified in the nineteenth century, so that the superimposed layer was left very thin (flashed) and engraved in flat patterns The casing of glass is impor- tant in Chinese work, (as shown by the snuff bottles), and from this Galle drew the inspiration for his *verres doubles*

In more recent glass work, brighter, thicker layers of glass are superimposed on darker and thinner layers, with attract ive results Efforts are being made in Czechoslovakia to give a new lease of life to the cut cased glass (Karel Wunsch in Novy Bor) [Figs 175–178, 180, 181]

CHARPENTIER French goldsmith and engraver of the beginning of the nineteenth century Five glasses engraved by this artist are known The engraving is in each case of extreme subtlety, reproducing in the most delicate detail the tiniest flowers in the garland ornament and the fine curls on the heads of his figures The name of the engraver was imprinted on a case containing a glass We learn that Char- pentier was a "graveur sur pierres et sur tous metaux. Il grave les cristaux dans un nouveau genre " (engraver of precious stones and all metals He engraves crystal in an entirely new style ') This last sentence no doubt refers to English lead crystal or English lead crystal style of cutting

The engraver's widow, Madame Desarnaud Charpentier, received a gold medal at the Paris Industrial Exhibition of 1819 for her exhibits It was stated in the *Annales de l Industrie Etrangere ou Mercure Technologique* that she obtained her raw material from the Établissement d Antigues This establishment, which produced lead glass in the English

fashion, was founded in Vonêche near Brussels in 1802, and was later, after the setting up of subsidiary glass houses in Baccarat and Val-Saint-Lambert, in a position to make the French glass industry independent of English lead crystal importation, it had been reliant on foreign materials throughout the previous century [Fig 168]

Cinerary Urns Spherical or ovate glass urns, usually with a broad rim The cover has two erect loop handles They originated from Greek clay vessels (Hydria) and were used at first for storage purposes and later as burial urns The earliest burial urns known date from the time of the first Roman Emperor, the latest from the middle of the third century A D They were found in large numbers in burial grounds, especially in Gaul and the Rhineland [Fig 23]

"Combed" Decoration This type of decoration is principally associated with ancient Egyptian glass Threads of coloured glass were pressed onto the glass vessel whilst it was still hot, and these were then "combed" or "tooled" into zig zag, feather and other patterns [Figs 1, 3]

Crown Glass Flat sheets of glass for the making of windows etc A blown bubble of glass was cut open, rapidly rotated and reheated from time to time until it formed a flat disc on the iron This process gave the familiar bull s eye window panes of the Middle Ages

Crystal Glass The word crystal is derived from the Greek *Krystallos*, that is, "clear ice", rock crystal, hence its use in referring to very clear transparent glass Venetian glass of the sixteenth century was known as *crystallo* because of its contrast with the green *Waldglas* (q v) In the seventeenth century, use of the term was extended to embrace the Bohemian potash lime crystal glass Subsequently it was applied to English lead crystal which was introduced, very successfully, onto the market in the eighteenth century
Today high quality cut glass is generally meant when the term is used, and lead crystal must contain at least 18% lead oxide

Crystallo-Ceramie Otherwise known as "sulphides" Reliefs (mainly portraits) moulded from a soft paste of porcellaneous, glass or china clay content, then sculpted into fine detail, and fired The resulting medallions were inserted into a bubble of glass from which the air was extracted, so that they were solidly lodged in the mass of glass The process was perfected by Apsley Pellatt (q v) although he derived his knowledge from a French source His brilliant flint glass was excellent for this purpose, showing off the medallions to perfection, and the whole was further enhanced by the deep cutting of the heavy metal

Cullet Glass sherds which are re used in the melting process

Cutting Cutting of glass followed soon after the advent of glass-blowing The age-old technique of cutting precious stones and rock crystal was transferred to glass Glass cutting in ancient times reached its climax in the Cologne area in the third and fourth centuries A D The great revival took place in Bohemia and England in the seventeenth and eighteenth centuries Some special patterns achieved by cutting are facet cut, producing shallow diamond fashions, flute cresting, producing parallel hollowed or notched flutes, star cutting, producing diamond patterns of all sorts, curved cutting, producing shallow, circular or crescent shaped slices
For shallow facet cutting a vertically rotating iron wheel, which is fed with emery or sand, is employed The cut surface is then successively polished by a fine grained stone wheel, a wooden wheel and tripoli powder [Figs 38, 166, 235]

Czechoslovakian Glass Since 1918, glass produced in Czechoslovakia has been known by this term, although Czechoslovakian literature includes under it the earlier Bohemian glass To complicate the issue still further, outside Czechoslovakia modern products are often referred to as "Bohemian" The contemporary Czechoslovakian glass industry is aware of its long tradition and continues to use classical techniques of glass cutting and engraving to a greater extent than most other countries, although adapting these techniques to the modern idiom Some 100 designers, most of them ex students of the Prague School of Art, are active at the present time, involved with both industrial and art glass [Figs 227 235]

References F X Jiřík *České Sklo*, Prague 1934, Museum des Kunsthandwerks Leipzig *Tschechoslowakisches Glas* Exhibition Catalogue (Text A. Adlerová) Leipzig 1964, *Tschechoslowakische Glasrevue* monatl. Zeitschrift Prague J R. Vávra, *Das Glas und die Jahrtausende* Prague 1954 J Raban *Modernes Bohmisches Glas* Prague 1963 (this work gives a list of names of most of the leading Czechoslovakian glass-designers)

Daumenhumpen, Daumenglas Large cylindrical or barrel shaped goblet with circular indentations (*Fingernapfen*), most probably to give the hand a firm hold of the glass [Fig 117]

Daum Frères The Daum brothers founded a glass works in Nancy at the time of the Franco Prussian war Greatly influenced by Gallé (q v) they produced glass in his style, yet not lacking in characteristics of its own The firm still exists, now known as the "Crystalleries de Nancy", producing, according to its tradition, glass which reflects the spirit of the times [Fig 182]

Decolorising Decolorising always played an important role in the history of glass technique, since the sands used for glass making almost always contained impurities, mostly traces of iron which gives the glass a greenish tint The usual decolorising agent is oxide of manganese, the so called glass maker s soap J Kunckel (q v) in his *Ars vitraria*, when referring to Neri s first book, advises German glass makers to use pyrolusite, that is oxide of manganese in a mineral form, as "soap" rather than the more expensive

Piedmontese manganese, though the method was said to be somewhat out of date He regrets that he is unable to publish his new and much better recipe for making glass by adding carbonate of lime Decolorising agents act either physically by chromatic neutralisation or chemically by releasing oxygen, e g arsenic, the greenish ferrous oxide is trans formed into yellowish ferric oxide

DIAMOND The hardest precious stone known, chemically, pure carbon Diamond splinters are used for diamond point engraving (line engraving and stipple engraving)

DIAMOND ENGRAVING The glass surface is scratched with a diamond point It was employed for ' writing" the owner's name on a vessel from the fifteenth century onwards Its use for artistic decoration started presumably in Venice The usual ornaments consist of formal plant motivs such as scrolled foliage, large flowers or scroll work Shades were obtained by short parallel strokes From Venice diamond engraving was taken over by glass makers at Hall in the Tyrol Here it was practised together with cold painting Again borders of formal plant motivs are typical The hey day of diamond engraving came in the second half of the sixteenth century Later it was applied also in Bohemia Silesia and the Electorate of Brandenburg The artistic climax was reached in the Netherlands Used on a very large scale it offered an alternative to the decoration in enamel pigment which was so fashionable in Germany Glasses with engraved calligraphy were common, many such glasses with mottos and proverbs are still extant Among the improved Dutch diamond engravers the sisters Roemers of Amsterdam (Anna Roemers, 1583–1651 and Maria Tesselschade, 1594–1649) and Willem Jacob van Heemskerck of Leiden (1613–1692) are notable In the eighteenth century the line engraving was superceded by the delicate technique of stippling with a diamond point (David Wolff and Greenwood q v) Both line-engraving and stippling by means of the diamond point have been revived in our time and further developed into modern styles of decoration, especially by Ilse Scharge Nebel [Figs 88 105, 123, 124 136, 137]

DIATRETA GLASS (VASA DIATRETA) Term given by J J Winckelmann to a small group of glasses of fourth century A D Rheno Roman origin These glasses consist of a solid vessel which is surrounded by a basket like network of interlaced ornaments The outer layer of ornaments is joined to the solid inner part of the cup shaped vessel by short glass struts In Roman literature the name *diatretum* was indiscriminately used for all glass vessels which were cut by the wheel perhaps even for vessels cut out of precious stones Many difficulties in the philological interpretation of ancient documents result from this remarkable confusion There are conflicting opinions about the process of making *diatreta* glasses Since Winckelmann it has been supposed that the vessels were made of one solid piece of glass which was then cut While Anton Kiesa Fritz Fremersdorf and Otto Doppelfeld hold this view, other experts propose a different method Wilhelm von Eiff thinks the glass was produced by moulding in two independent layers, according to K Wiedmann the connecting rods were perhaps fused on by soldering, O Knapp regards this question as unsolved and categorically denies the possibility of the design being undercut More recent research (O Doppelfeld) supports the theory that the *diatreta* glasses were pro duced by the cutting of a solid vessel, this opinion is founded on a passage of Roman literature (from a fragment of Oppian) There it is said that in the event of unsuccessful cutting of a *diatreton* vessel damages had to be paid The craftsman was to be permitted to accept the work only on condition that he took no risk whatsoever Doppelfeld concludes from this legal clause that the *diatreta* cutter was put into a privileged position Nevertheless the question remains whether or not the term *diatreta* referred to all kinds of cut glass or to glasses in Winckelmann s sense – So far twenty six *diatreta* glasses have been found inclusive of fragments The most up to date reports on the subject are given by Doppelfeld, Harden and Toynbee [Figs 41, 42]

References J J Winckelmann, *Werke III* p 115 Anton Kisa, *Das Glas im Altertume* Leipzig 1908 p 621 Bruno Mauder *Diatreten und ihre Herstellungsweise* in *Keramische Rundschau* Berlin No 25 p 321 (1932) Oscar Knapp *Diatreten und ihre Herstellungsweise* in *Keramische Rundschau* Berlin 40 No 9 p 116 117 (1932) Hans Eiden, *Diatretglas aus einer spätrömischen Begräbnisstätte in Niederemmel an der Mosel* in *Trierer Zeitschrift* Trier 19 p 26–40 (1950) Karl Wiedmann *Das romische Diatret mit den Augen des Hohlglastechnikers gesehen* in *Glastechnische Berichte* Frankfurt a M. 27 p 33–44 (1954) Oscar Knapp *Über die Herstellung der spätrömischen Diatret Gläser* in *Silikattechnik*, Berlin 5 p 378–381 (1954) Otto Doppelfeld, *Das neue Kolner Diatretglas* in *Germania* Berlin 38 p 403–417 (1960) Otto Doppelfeld *Das Kolner Diatretglas und die anderen Netzdiatrete* in: *Gymnasium* Heidelberg, Vol. 68 p 410–424 (1961), Otto Doppelfeld *Das Diatretglas aus dem Gräberbezirk des römischen Gutshofs von Koln Braunsfeld* in *Kölner Jahrbuch für Vor und Frühgeschichte* Berlin, 5 p 7–34 (1960/61) D B Harden und J M C. Toynbee *The Rothschild Lycurgus Cup*, in *Archaeologia* 97 p 179ff (1959)

DISEASED GLASS The disintegration of all alkaline chalk-glass that is, all ancient glass which is subjected to humidity, water, carbon dioxide or acids in the soil
The "disease ' takes on two forms 1 an even disintegration of the entire surface, with a thin layer of scales, producing the familiar iridescence of ancient glass, forms, 2 deeper corrosion in the wall of the vessel for reasons unknown, or at points where the vessel was damaged Both types of decay lead eventually to the total disintegration of the vessel The process involved consists of the extraction of the alkali in the glass and the consequent increase in the silicic content The final result of the process is silicic acid with small quantities of titanium aluminium and iron
Sometimes faulty knowledge of the correct proportions of the ingredients used in making glass resulted in an excess of alkali and a glass that is unstable in composition Such 'diseased' glass develops a network of fine interior cracks, a sour smelling liquid forms on its surface and it eventually decomposes and crumbles This defect in its early stages was known in England as crisselling'" Honey p 4

References Fritz Kämpfer, *Kranke Gläser*, in *Neue Museumskunde* Berlin, 6 1965 p 211–214, Gustav E. Pazaurek, *Kranke Gläser*, Reichenberg 1903; Rolf Wihr *Glaserkrankung und Möglichkeiten ihrer Behandlung*, in *Trierer Zeitschrift* Trier 24–26 1956–58, No 1

Dolphin Bottles Small ancient vessels with fused decoration resembling sea animals, usually dolphins They are products of Roman glass making and were mainly made in Italy, Gaul and the Rhineland They were usually worn suspended from the belt by a bronze chain or string

Reference A Kisa, *Das Glas im Altertume* Leipzig 1908 p 761

Double Glass A An outer glass, which was usually without a bottom, was made to fit exactly round an inner one (see also *Zwischengoldgläser*) The process is described by J Kunckel (q v) Vol I part 2, chapter 27 The inner surface of the outer beaker is painted to resemble marble and delicately veined to the outer surface of the inner beaker gold leaf is applied When the two are put together, the outside of the double walled beaker appears marbled, and the inner gilt *B* Two superimposed vessels (beaker or wine glass) which were given as wedding or friendship glasses In the collection of the Germanisches Nationalmuseum in Nuremberg there is a seventeenth century double glass consisting of two superimposed wine glasses The cover of the lower is crowned by a smaller one The inscription "Vivat des Herrn (master), Vivat der Frau (mistress)" indicates the purpose

Egermann, Friedrich, 1777–1864 An outstanding Bohemian glass manufacturer of the Empire- or Biedermeierperiod, born at Blottendorf near Haida He decorated many of his glasses by staining them with amber or ruby colours (*Silber lasur* and *Kupferrubinlasur*, also termed *Kupferrubinätze*) The flashing which was applied with a brush, served as a subsitute for the more complicated overlay glass Moreover, Egermann is the inventor of the famous *Lithyalin*, a glass which aimed at imitating precious stones and was produced in shades of dark red brown, grey green, dark green to bluish green, also veined or marked

References Gustav E. Pazaurek, *Gläser der Empire- und Biedermeierzeit* Leipzig 1923 Jarmila Brožová, *Vor hundert Jahren starb der berühmte böhmische Glasmacher Friedrich Egermann in: Tschechoslowakische Glasrevue* 1964; 7 p 201–204 Prague 1964

Eiff, Wilhelm von Stone and glass cutter, born 1890 at Goppingen in Swabia, died 1943 From 1922 professor at the Kunstgewerbeschule (art school) Stuttgart His training took him to Paris (Lalique), Vienna (Stephan Rath) and northern Bohemia (Lobmeyr) He may be regarded as the greatest glass engraver of the twentieth century Wilhelm von Eiff was the first to make use of the flexible drive for glass cutting [Fig 198]

Reference Gustav E Pazaurek, *Kunstgläser der Gegenwart* Leipzig 1925

Enamelled Decoration Powdered glass coloured with metal oxides is applied to the surface of glass vessels by means of an oily medium, and then fired at a temperature of 700 to 800 °C The application, which has a strong lead content, fuses into the glass surface, and the result is a fixed, shiny decoration, translucent or opaque

The technique of enamel painting was employed in Egypt at the time of the Roman Empire, and later in Syria and the Rhineland Its greatest period may be said to be represented by the Islamic glasses from Mesopotamia and Syria, produced at centres such as Raqqa, Damascus, and Aleppo in the thirteenth and fourteenth centuries During the fifteenth Venice developed her own style of enamelled decoration which was the inspiration for the numerous German enamel painted glasses which were at their best in the seventeenth century Armorial bearings were at first the most popular motif with German artists, their scope was wider from the end of the sixteenth century, although the well known representations of the *Reichsadler Humpen*, the *Kurfürsten* and *Apostelglas*, and hunting scenes or *Familiengläser* (family glasses) were frequently repeated Mention must also be made of the *Ochsenkopfgläser* of the Fichtel gebirge and the *Hofkellereigläser* of the Saxon courts The most important centres of German enamel painting were in the Bavarian Forest, in Bohemia, Silesia, Franconia, Thuringia, Hesse Saxony and Brandenburg It is sometimes difficult to attribute a glass to a certain place of manufacture unless there is some distinct local feature, since they had so many ornamental elements in common Some indication of origin is provided by the border just beneath the rim Franconian artists often painted a frieze of overlapping arches or zig zag pattern, on Bohemian glasses we usually see a border of enamel dots and in Hesse, gold borders with white dots or after 1670 plain gold borders A Hessian characteristic is the yellow crown with the cypher of the Landgraf Typical of Bohemia is a dark green or dark blue glass and vividly coloured enamels, whereas a light yellowish green predominates in Franconian glasses [Figs 125-134]

English Glass Mainly characteristic of it is the lead-crystal glass which was invented in England in the second half of the seventeenth century, and which was exported during the eighteenth century (see also flint glass, lead glass, Ravenscroft) General history the earliest glass houses were founded by the Normans in the south of England in the thirteenth century, but there were few of them throughout the Middle Ages Glass in the Venetian manner was produced in the late sixteenth and seventeenth centuries Glass making reached its height in England in the period from the end of the seventeenth century to the end of the eighteenth, when lead-crystal glass was being produced on a large scale English glass of this period had a strong influence on the Continental product, particularly evident in the cutting of that time English cut glass was at its zenith at the end of the eigteenth century, and became the inspiration of Bohemian and German manufacturers A shortage of wood compelled English glass makers to employ coal as fuel as early as the beginning of the seventeenth century English glasses of the eighteenth century are renowned for the excellence of their metal, the shapes

are perhaps not so elegant as their Bohemian and German counterparts but rather more stout and practical, the decoration by engraving is also less refined

Important present day glass manufacturers are James A Joblin & Co, Ltd Sunderland, James Powell and Sons Ltd, Wealdstone, Stuart and Sons, Wordsley, Stourbridge, the most important designers of art glass making are Mrs Phyllis Boissier, London (diamond engraving), Sheila Elmhirst, Ipswich (diamond engraving), John Hutton, London (engraving), Juniper Workshop and Edinburgh College of Art, Glass Design Department, Royal College of Art, London, Laurence Whistler, (diamond engraving) [Figs 136, 137, 140, 145, 152, 153, 155, 156, 158, 159 167, 191, 192, 223]

FICHTELGEBIRGE GLASSES (FICHTELGEBIRGE = Fir mountains, Middle Germany) Large beaker like vessels with enamel decoration which usually depicts the Ochsen kopf the second highest peak of the mountain range The earliest known specimen is dated 1656, the latest stems from the middle of the eighteenth century They were made in the glasshouses of Bischofsgrün The characteristic representation of the Ochsenkopf shows a steep, tree covered hill, and on this the rebus of the mountain, an ox's head the whole surrounded by a chain with padlock Forest animals and the rivers Main, Naab Saale and Eger, which have their sources in those hills are also shown [Fig 131]

Reference Thilde Ostertag *Das Fichtelgebirgsglas Beiträge zur fränkischen Kunstgeschichte* Erlangen 1933

FINNISH GLASS The earliest known glasshouse was founded in 1793 and produced household glass from that date The first artistic glass production dates from 1940 The main glasshouses are Karhula Iittala the Notsjo and the Helsinki glassworks Tapio Wirkkala (born 1915), Timo Sarpaneva (born 1926) Kaj Franck (born 1911), and Saara Hopea (born 1925) are the most notable designers Finnish glass making is not principally concerned with the production of decorative pieces alone, but with functional glass which embodies the highest artistic expression Its designs reflect Scandinavian character [Figs 217–219]

FLINTGLASS Term used for lead glass since Ravenscroft, because calcined powdered English flint was used as silica supply [Figs 165–168]

FLUTE Very tall, slender wine or cider glass (similar to the modern continental champagne glasses but even slimmer) belong to the most typical Dutch glasses ranging from the sixteenth to the eighteenth century [Fig 77]

FONDI D ORO Shallow, ancient vessels, their bases were ornamented with a medallion of engraved gold leaf which was covered by a layer of clear glass They were made from the first until the fourth century A D, originally in Alexandria and later in Rome but from the third century onward also in Cologne where the technique reached its climax Thematically they cover all aspects of life, e g portraits, everyday scenes, Christian and Jewish symbolism etc The most famous specimen which has come down to us is a dish which was found at the church of St Ursula in Cologne and is know kept in the collection of the British Museum It was certainly made in a Cologne workshop of the fourth century

Mutatis mutandis the same technique was adopted for the eighteenth century Bohemian *Zwischengoldgläser* and for the *Mildner glasses* of about 1800

References Fritz Fremersdorf *Ein bisher verkanntes römisches Goldglas mit christlichen Wandersprüchen in der Römischen Abteilung des Wallraf Richartz-Museums Köln* in Wallraf Richartz Jahrbuch, N F Vol I 1930 p 282–304

FRANKISH GLASS (Merovingian glasses) comprises glass of the period from the 5th century up to about the year 700 A D, when the custom of burying vessels with the deceased was discontinued The glasses are confined to drinking vessels, bottles and ewers are almost unknown The glasses are mostly characterized by the absence of foot or any practical base Conical cups or bell cups are the most common forms The rims were smoothed in the fire The glasses are almost without exception of impure greenish or yellowish green metal The decoration consists solely of trailed threads or moulded ribs, cutting or engraving do not occur [Figs 46, 49]

Reference *Glas und Schmuck der Römer und Franken* Altertumsmuseum der Stadt Mainz, Exhibition catalogue Mainz 1960.

FRENCH GLASS A thriving industry was already established in Gallo Roman times as well as during the Frankish or Merovingian period Tradition has it that the Italian glasshouse of Altare (q v) was founded by Norman glassmakers During the Middle Ages numerous glasshouses produced the so called *verre de fougère*, which is similar to the German *Waldglas* In the sixteenth and seventeenth centuries there is a notable influence from Venetian glass, because craftsmen from Murano and Altare were employed in many French glasshouses Nevers adopts the technique of lamp blown glass from Venice in the seventeenth and eighteenth centuries In the seventeenth century France excels in the production of mirrors Until the nineteenth century, however, French glass making is of less importance than Bohemian and German Both the adoption of English lead-crystal glass and the development of a refined cutting technique brings about a blossoming in the beginning of the nineteenth century French glassmakers of the Art Nouveau period, most notably E Galle (q v) and Daum frères (q v) influenced Bohemian and Austrian glass to a large extent The most important glass manufacturers of to day are Cristalleries de Baccarat, Baccarat and Paris, founded 1765, Cristalleries Royales de Champagne, Bayel and Paris, founded 1666, Cristalleries de Saint Louis, Paris, founded 1767, Cristalleries et Verreries Reunies de Choisy le-Roi, founded 1821, Daum et Cie, Nancy, founded 1880, René Lalique et Cie, Paris, established 1909 and Les Gemmaux de France, Paris, founded 1953 [Figs 168 180–182 189, 190]

Reference James Barrelet *La Verrerie en France* Paris 1953

FRIT According to Theophilus (Book 2, Chapters IV-V) this term refers to the pre heating of the glass ingredients until they become red hot, but do not melt or fuse, ("take it with an iron shovel and shake it onto the upper plate of the smaller compartment of the furnace, so that it becomes red hot When it begins to get hot, turn it over immediately so that it does not become fluid or fuse in the heat") Ch V "take up on a shovel the frit and fill all the crucibles with it" This process eliminates moisture from the material and reduces the development of gas in the melting process, and thus a glass with fewer impurities is achieved In his annotations to Neri's first book Kunckel says "that which you call a mixture is here termed frit" The same process is termed by Kunckel calcination, that is to desiccate the ingredients (pre-heating)

GALLÉ, ÉMILE, 1864–1904 An outstanding French glass artist of the Art Nouveau period Generally speaking, most of his glasses are cut-overlay vessels modelled on Far Eastern examples He favours muted shades in his exotic colour schemes, and mainly plant motifs enhancing the basic shape of the vessel [Figs 180, 181]

GILDING Gold-leaf is applied to the vessel, and sealed with a layer of clear glass Gilt beads were incorporated into necklaces in Egypt at the time of the eighteenth Dynasty, B C The gold mottled glasses produced at the time of the Roman Empire are worthy of note, gold-leaf was applied to the hot glass bubble, and during further blowing would break up and form golden speckles, gold dust was also sprinkled on the glass vessels while they were still hot [Figs 5, 36, 68]

GLASS the etymology of the term There were various words for glass in the Greek language *hyalos* = a coloured, but transparent glass, *krystallos* = glass transparent as water, *lithos chyte* = "molten stone" = coloured glass Latin *hyalus*, *krystallus*, *murra*, and, from the middle of the first century B C (Cicero) *vitrum* The origin of the word *vitrum* remains unexplained, it may be that there is an analogy with *vitrum* = a blue colouring material, from identification with the blue Egyptian vessels From this word the French *verre* the Italian *vetro* and the Spanish *vidro* are derived In the Germanic languages the word for amber, *glesum*, was adopted for the new substance

GLASS BANGLES Bangles made of glass were known as objects of personal adornment in the Early Iron Age, the La Tène period, and in the time of the Roman Emperors They were produced in two ways 1 by bending a glass rod of varying patterns into a bangle shape, (examples of this type have been found in graves of the Roman period), 2 by piercing a mass of hot glass and whirling it round an iron rod This latter method is described by Theophilus in Vol I Book 2, Ch 31 Bangles, some with an underlay of coloured glass, have been found in the graves of wealthy Celtic women The Celts used glass for making articles for personal adornment only

Reference Thea Elisabeth Haevernick *Antike Glasarmringe und ihre Herstellung in* Glastechnische Berichte Frankfurt a M 25 7 July 1952 p 212–215

GLASS HARMONICA The earliest mention of a glass instrument, sounded by stroking the rims of glass vessels with the wetted finger tips, occurs in the inventory of the Ambraser Collection, 1596 In 1762 the American physicist and statesman, Benjamin Franklin, developed the instrument still further His instrument he called a "glass harmonica", which had rotating glasses controlled by a foot treadle Many concerts were warmly applauded throughout Europe The glass harmonica became the fashionable instrument of the *Wertherzeit* A present day glass instrument is the "Glass Harp" developed by Bruno Hoffmann in Stuttgart

GLASS MOSAIC Brightly coloured glass pieces are pressed into cement or a similar substance so as to form pictures or patterns Descended from the stone or pottery mosaic, (mosaic with both glass and pottery used together existed from the first century A D) Mosaic purely from glass dates from the third century A D , and became the characteristic decoration for Christian Churches The art spread from Byzantium to Venice, other parts of Italy, and Russia The art was at its height at the time of the Early Christian and Byzantine mosaics, such as may be seen at S Vitale in Ravenna A revival of the art occurred in Germany at the end of the nineteenth century

GLASS PAINTING Painting on the inner surface of a glass panel or bottle (China, eighteenth to nineteenth centuries), also used in the Bohemian *Zwischengoldglaser* The paint is not translucent and never fired A special effect is obtained by applying gold or silver leaf, which is sometimes also engraved, behind the decorated surface [Fig 160]

Reference Otto Freytag *Hinterglasmalerei* Ravensburg without date, Josef Vydra *Die Hinterglasmalerei* Prague 1957

GLYPTOGRAPHY (GEM CARVING) Gem carving may be divided into two types 1 deeply incised cutting 2 cameo-relief carving Precious stones were originally used as seals, the earliest examples dating from the ancient Mesopotamian civilisations Glyptic work is seen at its best in Mycenaean, Greek, Etruscan and Roman art One of the most famous ancient cameos is the "Apotheosis of Augustus" in the Kunsthistorisches Museum in Vienna The gems used were principally amethyst, zircon, agate (q v) and carnelian The cameos are usually cut from semi precious stones which have several layers of contrasting colours, such as onyx, chalcedony and sardonyx The stones were cut on the lapidary s wheel Since the time of the early Roman Emperors, glass had also been subjected to this technique, first of all in the city of Alexandria The most famous example of this art is the Portland Vase in the British Museum, which is of blue glass cased with white, then cut, resembling the ancient onyx cameos

Cameo carved glass was not produced after the first century A D It occurs later, but was treated differently in China (snuff bottles), in Bohemia (*Hochschnitt* goblets) and in the Art Nouveau period, (cut cased glass especially by Emile Galle) [Figs 149 180 181]

GONDELACH, FRANZ A glass engraver from Hesse, born in 1663 at Almerode near Cassel He held the post of *Hof glasschneider* (glass engraver by appointment to the court of the Landgrave Carl of Hesse Cassel) in Cassel until the first quarter of the eighteenth century Some of his work was executed on Potsdam glass and is similar to the engraving done by Spiller (q v) A few of his pieces were marked by an eight rayed star

Reference Gustav E Pazaurek, F *Gondelach* Berlin 1927

GRAALGLAS Trade name for coloured mosaic like glasses produced by the Orrefors Glasbruk AB in Sweden invented by Simon Gate and Edvard Hald

GRAL GLAS Products of the Gralglashutte Durnau near Goppingen in Germany established 1930 Chief designers are Ch Baumann Konrad Habermeister and Josef Stadler [Fig 237]

GRAPE CLUSTER BOTTLE A small bottle like vessel with wide foot and two handles blown into a mould to form the shape of a grape cluster In use in the second and third centuries A D in Italy Gaul and the Rhineland [Fig 15]

GREENWOOD FRANS 1680–1762 A Dutch glass engraver of English descent Together with David Wolff (q v) he was the most outstanding exponent of stipple engraving A large number of glasses decorated by his hand were signed The earliest glass which bears his signature was made in the year 1720 So far only one glass line engraved by him is known all the others were stippled His designs comprise genre pictures and mythological scenes and to a lesser extent, still lifes and calligraphy [Fig 138]

Reference Francis Buckley *Frans Greenwood*, London 1930

HALL IN THE TYROL Glasshouse founded by the Augs burg glassmaker Vitl under the patronage of the Archduke Ferdinand in 1534 During the first decades of its existence, fine glasses in an adapted Venetian style were produced with the assistance of Italian glassmakers, but not without difficulties for the necessary soda had to be imported The glasshouse was still flourishing in the seventeenth century but without any important production The majority of the surviving glasses are now in the Hofmuseum in Vienna whence they were taken from the Ambras Castle in the Tyrol Typical Hall glasses are covered goblets and ewers in the Venetian fashion They are characteristically diamond engraved and they are also decorated with cold painting in red and green colours [Fig 87 89]

Reference Erich Egg *Die Glashutten in Hall und Innsbruck im 16 Jahr hundert Tiroler Wirts haftsstudien* 15 Folge Innsbruck 1962

HALLORENGLAS Large cylindrical or slightly conical drinking vessels usually with Saxon enamel painting, made for the 'Halloren", members of the Salters Company in Halle, for the annual Whitsuntide beer drinking ceremony *Halloren* glasses dating from the seventeenth to the mid-eighteenth century have come down to us The painted decoration, executed in vigorous simplicity, shows in four zones a panorama of the town of Halle, the Talamtshaus, the procession of the Halloren, and the arms of the guild supported by two saltworkers [Fig 132]

HEAD SHAPED VESSELS These are the development of mould blown glasses taking the form of a Medusa head They bear strong resemblance to Greek pottery of natura listic design It is thought that such glasses were produced in various parts of the Roman Empire, most probably in Sidonian Alexandrian and Rhenish glasshouses They reached the height of their popularity in the third century A D a favourite type being the portrait caricature The Emperor Tacitus, who is said to have blown glass him-self owned a collection of glass curiosities Nero's court fool a crippled shoemaker, was the inspiration for the design of one of them [Figs 17–19]

HEDWIG BEAKER eleventh century Egyptian glass cut in high relief The name derives from St Hedwiga, the patron saint of Silesia Twelve specimens of this glass are known The relief cut decoration consists of stylised lions, griffons or formal palm leaf pattern [Fig 57]

HESSE In the late Middle Ages this *Land* was one of the most important glass producers As early as 1406, forty glass makers in the Spessart Mountains and surrounding forest districts had formed themselves into a strict guild The Spessart guild controlled working hours and level of production After 1525 the centre of this guild was trans ferred to the forest region of Kaufungen, to the village of Almerode In the seventeenth century enamel painting was being executed throughout Hesse Typical of the style in this area are the yellowish green metal and the gold leaf borders with engraved scale pattern and white enamel dots In the eighteenth century a goblet peculiar to Hesse was evolved with a high bell shaped foot and an air bubble at the bottom of the bowl The most important glass engravers were Franz Gondelach and Franz Trumper

References Margarete Killing *Die Glasmacherkunst in Hessen ein Beitrag zur Gewerbe und Kunstgeschichte der deutschen Renaissance* Marburg 1927

HOCHSCHNITT A manner of cutting glass so that the design of the decoration remains in relief, while the remain ing parts are ground away with the wheel (cf Glyptography) The Alexandrian and Roman glass reliefs (such as on the Portland Vase), the Hedwig glasses the Silesian goblets of about 1700 the Chinese snuff bottles of the eighteenth century and the Galle vases were ornamented in this way Modern glass manufacture, particularly Bohemian has fruitfully exploited this technique again [Figs 57, 149, 176–178, 180 181]

Hoffman, Josef, 1870–1955 Viennese architect and handicraft expert, one of the most prominent initiators of the Vienna Secession 1897, the Vienna Crafts Centre (*Wiener Werkstatte*) 1903, and the Austrian Werkbund (Arts and Crafts Society) 1912 Well known for his glass designs, especially the so termed broncit-glass (q v) [Fig 187]

Hofkellereigläser Drinking glasses of the royal residences in Saxony, with armorial bearings and usually the initials and titles of the ruler in enamel pigment, from the royal cellars of Dresden, Moritzburg, Konigstein, Lossnitz, Torgau, Pretzsch, Magdeburg, Halle, Merseburg, Weissenfels, Naumburg, Querfurth, Christiansburg, Altenburg, Gotha Mostly decorated in Saxony Considerable numbers of these glasses have come down to us

References Karl Berling *Die sächsischen Hofkellereiglaser*, in *Festschrift zum funfundsiebzigjahrigen Jubiläum des Koniglich Sächsischen Altertumsvereins* Dresden 1900 Beiheft zum *Neuen Archiv fur sachsische Geschichte und Altertumskunde* Vol XXI.

Humpen Cylindrical drinking vessels of the sixteenth, seventeenth and eighteenth centuries, usually decorated with enamel and less often with cut or engraved decoration Their frequently enormous size can be traced to the custom of passing a drinking glass round a group of people [Figs 117, 125–131]

Hungarian Glass Glasshouses founded in the fourteenth century, strongly influenced in the sixteenth century by Venetian, and in the seventeenth and eighteenth centuries by German and Bohemian glass Worthy of note is the peasant like art of the more ancient Hungarian glass productions Jugs and bottles are the most common vessels In the eighteenth century the faience made in Habane no doubt had its influence on the style of decoration executed on Hungarian glass

Reference Béla Borsos *Die Glaskunst im alten Ungarn* Budapest 1963

Hyalith Glass A black, more rarely red opaque glass invented in Bohemia in the first quarter of the nineteenth century In 1820 an eight year monopoly for its production was granted to the glasshouse of Count Buquoy The purpose behind this glass was to imitate the extraordinarily popular Wedgwood ware Patterns in the spirit of Wedgwood designs were painted in gold and silver on the glass

Ice Glass An invention of the sixteenth century, the hot glass is dipped for a moment in water and then re heated The crackles caused by the sudden change of temperature are thus fused together again Ice glass with a rough surface is also made by rolling a gathered lump of soft hot glass over tiny glass splinters The surface of ice glass can also be treated with hydrofluoric acid if covered with a resinous substance which crackles when dried, the acid affects only the crevices and the covered areas retain their smooth surface

Iridescence A shimmer on the surface of the glass which may have its origins a) from prolonged burial in the soil or weathering, in this case the surface is scaly and the light broken up prismatically, producing an attractive rainbow effect in some ancient glass b) from the application of a metallic lustre, c) and most recently from the use of chemical substances

Irish Glass Glass was produced for the first time in Ireland in 1585 Irish glass was at its best from the end of the eighteenth to the middle of the nineteenth century The most important manufacturers are Waterford, founded in 1783, Cork, also founded in 1783, and Belfast, founded 1776 These glasshouses fashioned excellent lead crystal into heavy, solid shapes with restrained cut decoration Typical motifs are the fine diamond patterned arches or half moon shapes, and the shallow or deep cut stars Waterford Glass Ltd, Waterford, still produces glass in the traditional style [Fig 169]

References E M. Elville *The Collector' Dictionary of Glass* London 1961 W A Thorpe *A history of English and Irish Glass* London 1929

Jade The name given to three semi precious stones Nephrite, Jadeite, and Chloromelanite, the first two are usually green, sometimes grey or brownish often mottled and have a waxy appearance, the last is dark green to black in colour The word jade is derived from the Spanish *piedra de ijada*, (*piedra = stone ijada = side* – pain in the side) and this stone was said to relieve kidney trouble Jade is a material much favoured by artists particularly in China where it was also imitated in glass

Kantharos Shallow drinking vessels with foot and two handles used in Ancient Greece from the sixth century B C Often shown in pictorial representations of Bacchus [Fig 30]

Keulenglas Club shaped glass of a rather impure light green or yellowish green metal with several indented horizontal trails about 1500 A D [Fig 94]

Kopping Glasses Lamp blown glasses executed after designs by the Berlin painter and etcher Karl Kopping 1848–1914 [Fig 185]

Kothgasser Anton, 1769–1851 Viennese porcelain and glass decorator He was introduced to glass painting by Gottlob Mohn Most glasses by Kothgasser have a heavy-cut foot and a concave wall Views of towns and landscapes within an area of yellow stained glass surrounded by a goldleaf border are painted in translucent enamels [Fig 164]

References Gustav E Pazaurek *Glaser der Empire- und Biedermeierzeit* Leipzig 1923 Hermann Trenkwald *Gläser der Spatzeit (um 1790–1850)* Vienna 1923

Krater Ancient vase with wide mouth and small handles, of various types, e g Corinthian Bell, Calyx

KRAUTSTRUNK (CABBAGE STEM) GLASSES Cup like glasses of the fifteenth and sixteenth centuries with large flat based tapering applied prunts They are referred to in contemporary literature Mathesius has in mind the glasses with large upward drawn blobs when he uses this term [Fig 103]

Reference Franz Rademacher *Die deutschen Glaser des Mittelalters* Berlin 1963

KRONGLAS Trade term for the best quality grade of Bohemian crystal glass

KUNCKEL, GEORG ERNST Thuringian glass engraver, born in Ostheim on the Rhon and employed from 1721 at the court of Gotha Died in 1750 in Eisenach His signature is found on three of his works, of which two are in the Coburg collection A further thirteen of his products are dated Annegrete Janda Bux has ascribed approximately seventy glasses dating from the years 1721 to 1748, to this artist These examples have found their way to various parts of the world Kunckel probably studied the art of engraving in Nuremberg learning from the work of Friedrich Killinger and H W Schmidt Later he worked for a time on Nuremberg glasses Characteristic of his work are leafy festoons strewn with tiny polished cut berries pearl garlands flower head chains and trellised lambrequins with pearl tassels

Reference Annegrete Janda Bux *Der Thuringer Glasschnitt im 17 und 18 Jahrhundert* Leipzig thes s 1962

KUNCKEL JOHANN Chemist and glass technologist, stems from an old family of glass makers in Hesse The family name is already known in connection with the Spessart Ligue in 1406 Johann Kunckel was born in about 1630 at Rendsburg where his father worked as a mastercraftsman From 1679 till 1693 he was in charge of the Potsdam glass house and there he produced among other things the famous ruby glass with gold chloride the so called Kunckel glass In 1679 he published his book *Ars Vitraria Experimentalis or Vollkommene Glasmacherkunst* (*Complete art of glass making*) It appeared in five successive editions and is regarded as the first fundamental work on the subject of glass technology in modern times In 1693 Kunckel went to Sweden, where a knighthood was conferred on him As Johann Kunckel von Lowenstein he died on his estate in the Electorate of Brandenburg in 1703 [Figs 142]

Reference Robert Schmidt *Brandenburgische Gläser* Berlin 1914

KUTTROLF OR ANGSTER The German term *Kuttrolf* is derived from the latin *gutta* = drop, and *Angster* from the Latin *angustus* = narrow A description of the vessels will show why such names were chosen The common characteristic of these vessels of varying shapes is the pinching of the neck to form a number of narrow tubes through which liquid will pour slowly or emerge in drops In the Middle Ages the terms embraced vessels of many shapes but later three types were distinguished the many tubed Kuttrolf with a wide mouth, which has East Gallo Roman origins, the many tubed version with a bottle mouth, first made in Syria, and, also Syrian, the type with one tube which was still in use in Persia during the seventeenth and eighteenth centuries These peculiar forms, particularly those with bent necks consisting of several entwined tubes, were very popular in the Middle Ages, and are often depicted in the art of the period [Figs 112–115]

References Franz Rademacher, *Der Kuttrolf eine antike Glasform und Ihre Fortbildung im Mittelalter und in der Renaissance* in *Zeitschrift fur Bildende Kunst*, 62 1928–1929 Leipzig 1929 p 37–43

KYLIX Ancient drinking vessel consisting of two handled, shallow bowl on tall foot

LACE GLASS, *Vetro a reticelli* was produced in Venice at the end of the sixteenth century White threads in a criss cross pattern, each square" enclosing a tiny air bubble, are sealed within the double wall of the vessel This glass was made by arranging white glass rods, equidistant one from the other on the hot glass bubble the rods are then pinched together at top and bottom and the glass bubble twisted so that they form a spiral round it By sucking air out of the bubble, the craftsman collapses one half of it into the other, thus producing a double walled vessel with the rods or threads lying criss cross Another method was to fuse together two bubbles which have spiral threads in opposite directions [Figs 77, 78]

LAGONA a Roman water jug with a single handle

LAMP BLOWN GLASS articles which were not made in the factory at the furnace, but by a cottage industry using glass tubes softened into shape in a flame, at one time oil lamps and bellows were used This technique was probably discovered soon after glass blowing itself, and was used at first for the manufacture of glass beads In Venice, small figures and other objects were also made in the seventeenth century The technique spread to France (Nevers) and Holland (Amsterdam) At the end of the eighteenth century it was taken up in Bohemia and Thuringia Lauscha is still the centre of an extensive cottage industry in the Thuringian Forest, especially for the production of beads, toys and Christmas tree decorations Since the turn of the century efforts have been made to adapt this technique to the manufacture of glass vessels, the delicacy of the methods was ideally suited for the purposes of the Art Nouveau movement After 1920 W v Wersin succeeded in making small vases of coloured glass rods Arround 1930 fresh efforts were made by Wilhelm Wagenfeld to extend the Thuringian glass industry At the present time, besides the glass makers Albin Schaedel Volkmar Precht and Edmund Muller, the designers Ilse Decho, Ilse Scharge Nebel and Professor Horst Michel are engaged in the production of lamp blown glass [Figs 238, 240, 241]

References Johann Kunckel, *Ars vitraria experimentalis* 3 d Nuremberg 1744 p 398 *Vom kleinen Glass Blasen so mit der Lampen geschicht* Gustav

E Pazaurek *Kunstgläser der Gegenwart* Leipzig 1925 p 232 240 *Vor der Lampe geblasene Glasarbeiten* Albin Schaedel *Lampengeblasene Glaser* Museum des Kunsthandwerks Leipzig Ausstellungskatalog Leipzig 1962

LATTIMO, LATTICINO, LATTICINIO the Italian term for white glass, sometimes referred to as milk glass or *Milchglas* Used since the fifteenth century in the manufacture of Venetian glass of various patterns, such as the *vetro di trina* or *vetro a reticelli*, and the terms are sometimes loosely applied to refer to vessels which have such insertions of white glass Canes covered with a layer of colourless glass and canes of completely colourless glass are arranged according to the desired effect against the sides or in the middle of a cylindrical mould, and the remaining space is filled with molten colourless glass After being taken to the fire to ensure complete fusion, the lump of glass is drawn out and twisted into a long thin rod, containing fine threads of coloured glass It is then cut into canes of the desired length which in their turn are used, in a similar process, to produce the final vessel They are arranged around a stoneware mould, colourless glass is blown into it, then removed, the canes adhering to it, the outer surface of the bubble is then also covered with clear molten glass The whole is heated and thus fused, and the resulting patterned glass is used to make a vessel
In the seventeenth and eighteenth centuries pure white glass was used as a substitute for Chinese porcelain and decorated with Chinoiserie enamel painting In the nineteenth century Bohemia produced many *Milchglas* vessels with red or blue overlay
The opacity of white glass is obtained by the use of tin oxide arsenic or calcined bones [Figs 69, 76 78]

LAUENSTEIN glasshouse at Osterwald near Hamelin in Westphalia founded in 1701 An English glassmaker introduced at an early date coal for firing the furnaces The glass produced at Lauenstein is considered to possess the material quality of English lead glass and its features resemble English contemporary glass Typical products are goblets with bell shaped folded feet, drawn stems facet cut knops, and the bowls are frequently facetted at the base, there is almost always an air bubble in the bottom of the bowl Engraved decorations are not elaborate

References Christian Scherer *Zur Frage der sogenannten Lauensteiner Gläser* in *Cicerone* Leipzig V 1913 p 403ff Christel Mosel, *Die Glassammlung* Katalog des Kestner Museums Hannover 1957

LAUSCHA village near Neuhaus in Thuringia (Germany), a well known centre of glass blowing in the Thuringian Mountains A glass house is known to have existed there in 1595 [Fig 144]

References Rudi Hoffmann *Das Museum fur Glaskunst Lauscha* Steinach 1954 Barbara Pischel, *Die thuringische Glasbläserei* Weimar 1936

LEAD GLASS English invention, second half of the seventeenth century, see RAVENSCROFT

LEBENSALTERGLAS Drinking glasses produced mainly in the first half of the nineteenth century in Germany The decoration depicts the ages of man Whole figures representing each age group are posed on a flight of steps [Fig 165]

LEHMANN, CASPAR German gem cutter, employed at the Court of Prague under the Emperor Rudolf II In 1609 he obtained an Imperial privilege for engraving glass He is regarded as the first master of the art of glass engraving in modern history [Fig 146]

LEKYTHOS ancient Greek vase or jug with a cylindrical or round squat body, and narrow neck originally used for oil Used mainly as a funeral offering since the fifth century B C

LITHYALIN reddish brown marbled glass (with the appearance of sealing wax) invented in 1829 by Egermann (q v) of Blottendorf in Southern Bohemia

LOBMEYR well known Viennese glass manufacturer, established in 1823 The successive managers of the firm Josef Lobmeyr (1823–1855) Josef Lobmeyr Jun (1855 to 1864) and Ludwig Lobmeyr (1864–1902) are important in having perpetuated the tradition of glass engraving of northern Bohemia in their glasshouses at Steinschonau and Haida After 1902 came a re orientation towards the modern Viennese style under the artistic direction of Stefan Rath After 1910 Josef Hoffmann (q v) was one of the co directors The firm of Lobmeyr is still one of the leading manufacturers in the field of glass making [Fig 226]

References Robert Schmidt *100 Jahre osterreichischer Glaskunst* Vienna 1925 *Stefan Rath Lobmeyr* Vienna 1962

LYCURGUS BEAKER GLASS dark green glass with five figures in high relief cut out of the solid wall of the vessel representing the punishment of Lycurgus by Bacchus Probably Alexandrian workmanship of the fourth century In the British Museum Rothschild Collection

References Eberhard Schenk zu Schweinsberg *Der Becher des Lykurg Bemerkungen zu der Arbeit von E Coche de la Ferte in Glastechnische Berichte* Frankfurt a M 31 1958 p 470–472 *Journal of Glass Studies* The Corning museum of glass vol 2 1960 Corning New York, Ill 9 p 138

MAIGELEIN German drinking glass of the fifteenth and sixteenth centuries usually in the form of a beaker or tallish bowl mould blown, ribbed or fluted and with a high kicked base, although this term has been extended to include bowls of somewhat different shape [Figs 98 99]

References Franz Rademacher *Die deutschen Gläser des Mittelalters* Berlin 1963

MATHESIUS JOHANNES 1504–1565 parson of Joachimsthal, (now in Czechoslovakia) published the *Sarepta oder Berg Postill, darin von allerlei Bergwerk und Metallen Bericht gegeben wird* The fifteen sermons deal with glass making and are the source of much important information about medieval glass

MAUDER, BRUNO Glass artist born in Munich in 1877, died in Zwiesel, 1948, studied at the Kunstgewerbeschule,

Munich, and was from 1910 director of the Staatliche Fachschule fur Glasindustrie in Zwiesel Mauder was one of the first post 1900 artists to revert to the natural shapes of the material, the ball and the pear shape, as a basis for his creations This principle led away from the Art Nouveau designs, for although that movement had recognised the unique qualities of glass, it had nevertheless subjected it to preconceived ideas on design Bruno Mauder gave the German glass industry an impetus which still has its effect to day

References Bruno Mauder *Glas* Berlin 1944 Wolfgang von Wersin *Bruno Mauder Glaserzeugung und Glasveredelung Werkstattbericht 11* hrsg vom Kunst Dienst Berlin 1941

MERCURY BOTTLES A group of ancient bottles, blown, four sided and with a long tube like neck and flat rim, showing a relief of the god Mercury (hence their name – they were not made for containing mercury!) under the base Occasionally they are stamped with the name of the maker

MERRET, CHRISTOPHER 1616–1695 English naturalist, chemist and physician He translated into English Antonio Neri s *Arte Vetraria* The translation with his annotations, which were commented on by Johannes Kunckel in his *Ars Vitraria*, appeared in 1662 Merret must be regarded as one of the first scientists whose aim was to disseminate scientific knowledge

METAL Glass makers' term for the material after it has been fused in the furnace

MILDNER GLASSES Glasses by Johann Josef Mildner, 1764 to 1807, of the Gutenbrunn Glasshouse in Lower Austria Signed works exist from the period 1787 to 1808 The glasses are cylindrical and their decoration consists of *Zwischengold* medallions, in the double walled base there is often a picture, gold etched over red These glasses are among the best work produced in the Empire period [Fig 162]

References Gustav E Pazaurek *Glaser der Empire und Biedermeierzeit* Leipzig 1923

MILK GLASS see *Lattimo*

MILLEFIORI GLASS literally thousand flower glass", manufactured from the second century B C in Alexandria and later in Rome The flower or more rarely figure pattern is spread through the entire vessel Bundles of small glass rods, with a pattern in cross section were fused together, producing a multiplication of this pattern in one piece of glass which was then cut into the desired thickness The resulting pieces were then in their turn fused side by side to give a sheet of glass large enough for the object required [Figs 7 85]

MIRROR GLASS In ancient times and the early Middle Ages mirrors were made of polished metal, but a mirror of silvered glass was already known in Egypt in the first century B C In the thirteenth century, mirrors produced by a layer of lead behind a glass frame were in use in France, Germany, and Italy In the sixteenth century Venice took the lead in mirror making, after the technique of silvering by means of mercury had been invented there France took over in the seventeenth century, her most important centre for mirror-glass being St Gobain The magnificent Venetian mirrors of the eighteenth century are widely known

MIXTURE term for the ingredients before they are fired in the furnace

MOHN GLASSES Drinking and souvenir glasses with translucent enamel painting by Samuel Mohn, born 1762 in Weissenfels died 1815 in Dresden and by his son, Gottlob Samuel Mohn born 1789 in Weissenfels, died 1825 in Vienna The glasses are often in the shape of the so called *Ranftbecher* form which is typical of the beginning of the nineteenth century The painting consists of a coloured flower garland below the rim, and an area of illustration embracing many motifs, but mainly of town views and landscapes [Fig 163]

References Gustav E Pazaurek, *Gläser der Empire und Biedermeierzeit* Leipzig 1923

MOSQUE LAMPS Syrian vessels of the thirteenth and fourteenth century, richly painted with gold and enamel Suspended from the ceiling by chains attached to six loops on the vessel, and containing oil lamps Approximately 230 pieces are known, almost all of them from Cairo mosques The inscriptions in Kufic script always consist of a text from the Koran and praise the reigning Sultan, so that an accurate dating can be made [Fig 65]

References Carl Johan Lamm *Mittelalterliche Glaser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929/30

MURRHINE BOWLS ancient vessels, usually bowls in mosaic glass Highly prized during the time of the Roman Emperors, they are often mentioned in Roman literature, and it was Anton Kisa who first discovered that these allusions referred to glass vessels The earliest Murrhine bowls, made in Alexandria in the second century B C are cut out of a solid block of many coloured glasses fused together Later the following technique was applied coloured glass rods were arranged in bundles and fused together, the resulting mass was horizontally sliced, and the slices each showing a flower like pattern, were subsequently fused into a larger slice, or applied to a hot bubble of glass, cased with clear glass and then worked as desired It is probable that the majority of such vessels were then polished by grinding They were produced by Alexandrian glassmakers during the last century B C and the first century A D The technique was adopted by the Venetians and glasses of this type were named by them ' Millefiori glasses ' [Fig 7]

NERI, ANTONIO died 1614, a Florentine priest and chemist who published in 1612 his *Arte Vetraria*, seven books on glass making Neri himself worked in glass houses in Florence, Pisa and in Flanders, so we see that his knowledge is based on experiment and experience Ch Merret (q v) and J Kunckel (q v) wrote commentaries on the "Arte Vetraria"

NUPPENGLAS German glasses decorated with applied drops or prunts, in their turn subdivided into *Napfe*, *Stangenglaser* or *Krautstrunk* The *Nuppen* are produced by dabbing the vessel with a molten glass rod The point of the resulting blob may be drawn upwards or downwards as required Glasses may be dated according to the size and type of drops, the general shape of the glass being taken into consideration also The drops developed from the sharp little snail like *Steinchen* of the mid 1400's to sharp thorny appendages at the end of the fifteenth century, then became larger and flatter during the sixteenth Forms related to the *Nuppenbecher* are to be seen in the *Rüsselbechern* or Claw beakers of the fifth and sixth century with their hollow trunk like attachments, and in the *Daumenbumpen* (Thumb glasses) of the sixteenth and seventeenth century, where they are inverted These techniques are again being used by modern glass artists [Figs 99, 102–105, 107]

NUREMBERG GLASS ENGRAVING its main period dates from 1622, the year when Georg Schwanhardt (q v) returned to Nuremberg from Prague, to the end of the seventeenth century Nuremberg engraving is shallow, as a result of the thin-walled glass, unpolished and polished areas and diamond engraving (q v) are at times effectively combined The Nuremberg goblets have a flat foot, a shaft with hollow ball knops, or hollow balusters and discs and an oviform bowl The most talented engravers were Georg Schwanhardt the Elder Heinrich Schwanhardt (q v), Hermann Schwinger (q v), Hans Wolfgang Schmidt (q v), Paulus Eder, Georg Friedrich Killinger and Christoph Dorsch Around the year 1700, Nuremberg glass engraving was largely ousted by that of Bohemia and Silesia, which gained through the discovery of a better quality vehicle for it, Bohemian potash lime glass

References Erich Meyer Heisig *Der Nurnberger Glasschnitt des 17 Jahrhunderts* Nurnberg 1963

OBSIDIAN apart from rock crystal the only natural glass, normally shiny black or green, of volcanic origin, used by man for weapons, bowls and ornaments since the early Stone Age Hence man made black glass is often termed obsidian glass

OENOCHOE ancient one handled ewer, often with trefoil mouths, certainly used for wine

OMOM Syrian vessel for the sprinkling of rose water and other sweet smelling essences The form developed from the pilgrim bottle [Fig 64]

ONYX GLASS dark glass with a multicoloured, predominantly white streaking, produced by mixing various molten glasses together

OPAL GLASS this term is sometimes used to embrace various kinds of whitish metals Opaque white glass has for a long time been produced, either for making the entire vessel (at one point in imitation of porcelain) or as a decorative insertion, as in the Venetian *latticino* glass Semi-opaque or opalescent white glass has also been produced by using the ashes of calcined bones Tinges of other colours were introduced (Antonio Neri mentions opal glass as a peach coloured glass) and the glass may glow blue, green or pink The nineteenth century referred to this as "opaline" White glass is known as *Milchglas* in German for obvious reasons *Milch* = milk (cf the Italian *latticino*) [Fig 83]

OPAQUE GLASS glass of any colour which is not transparent, although it usually has a translucent effect

PASSGLAS (German), PASGLAS (Dutch) tall cylindrical drinking glasses in use in the seventeenth and eighteenth centuries in Germany and the Netherlands They are decorated at even distances with thin pincered horizontal trails At gatherings the glass was passed from mouth to mouth, and each man had to drink from one ring to the next in one draught [Fig 120]

PELLATT, APSLEY born 1791, died 1863 His father had founded the Falcon Glasshouse in Southwark Apsley Pellatt, Jun, is best known for his perfection of the crystallo ceramic (q v) technique, the inclusion of medallions in glass This demanded a flawless glass which was supplied by his firm Imitations by rivals are of poorer quality

PERSIAN GLASS important during several epochs in the history of glass making, a) in the Sassanian period, 226 to 642, b) in the Islamic period, especially in the thirteenth and fourteenth centuries, when it shows to a certain extent Chinese influence in the style of enamel painting, c) from the seventeenth to the nineteenth century, mass production of decorative bottles and jugs with Shiraz as its centre [Figs 58, 64 172, 173]

References Carl Johan Lamm *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten* Berlin 1929/30

POKAL German word for goblet (from the Italian *boccale* = ewer) The early Venetian glass goblets of the fifteenth century indicate that they were modelled on gilt vessels The goblet is a typical vessel of the European baroque period [Figs 69, 147–151, 154]

POLISHING OF ENGRAVED GLASS SURFACES (*Blankschnitt*) Joachim van Sandrart in his *Academie der Bau, Bild und Mahlereykunste* ascribes the invention of BLANKSCHNITT to the Nuremberg glass engraver Georg Schwanhardt (q v) The matt surfaces of the ground part of the *intaglio* engrav-

ing are polished by wheels edged with cork, leather, lead, pewter or brushes All the deeper parts of the cutting, which are usually of an even, greyish tinge and are not transparent, are heightened by this process and form a sculptural effect The play of light, caught and softly reflected by the rounded, polished contours of the engraved surface, deepens its relief considerably The Nuremberg school of glass engravers applied this method of polishing to the thin potash glasses at their disposal, and achieved a finesse which has never been surpassed The human body, in particular, is depicted with richness and luminosity
Thus before the advent of the heavier and more brilliant Bohemian glass the aim of the Baroque to express movement, light and space was realised in glass engraving [Fig 147]

PONTIL OR PUNTY the iron rod to which the glass vessels are transferred before their removal from the blowing iron for further working, such as the smoothing of the mouth, the forming of the neck in the case of bottles etc A scar known as a "pontil (or punty) mark in the base of the vessel often shows where it has been attached to the rod It is seen in nearly all glasses made before the nineteenth century, when glass makers began to erase it, sometimes by grinding the base to make it slightly concave, or by cutting a star shape

PORRÓN Spanish drinking vessel, seventeenth to nineteenth century, a conical ewer with a long tapering spout which is inserted near the base People drink from it without brushing it with their mouths The *porron* is derived from skin bottles [Fig 90]

PORTLAND VASE This very famous glass vessel was at one time in the Palazzo Barberini in Rome, was bought by Sir William Hamilton in the 18th century, was then owned by the Duchess of Portland, and is now housed in the British Museum In 1845 the vase was wilfully broken by a visitor to the Museum but has been carefully pieced together once more It is made of blue glass cased with white, the latter then being cut away to form a decorative mythological scene The vase was probably made in the first century B C in Rome

References Erika Simon *Die Portlandvase* Mainz 1957

POTASH an alkaline substance obtained originally by burning vegetation such as bracken, beechwood etc and used as a flux After soda, the most important alkali used for glass manufacture Ancient glass, Roman, Gallic, and Rhenish has a soda not a potash content The break with Rome occasioned by the invasions of the tribes compelled glass makers in the north to turn to potash, and its use was retained in those regions until the beginning of the nineteenth century and the Industrial Revolution in Europe A certain amount of lime was inevitably also included in the glass because of the use of potash giving the metal resistance to glass disease

Today potash obtained from molasses charcoal (found in the residues from the process of producing sugar from beet, and also produced synthetically) is used in the manufacture of good quality glass
Since the chemical composition of beechwood is liable to changes according to the locality (trace elements), a chemical analysis of old glass vessels can assist research into their place of origin The results are, however, not always conclusive, since cullet (broken or refuse glass) is often used for the production of glass

References Wilhelm Geilmann, *Beitrage zur Kenntnis alter Glaser III Die chemische Zusammensetzung einiger alter Glaser insbesondere deutscher Glaser des 10 bis 18 Jahrhunderts*, in *Glastechnische Berichte* Frankfurt/M, 28 1955 146–156

POTSDAM Foundation of the first glasshouse near Drewitz in 1674 but transferred to Potsdam 1679 Because it was found unprofitable it was leased into private hands by the Elector Friedrich Wilhelm From 1679 to 1693 it was run by Johann Kunckel (q v) In 1763 the glasshouse was moved to Zechlin, where it flourished till 1890 The most important engravers of this glasshouse were Friedrich Winter (q v), Gottfried Spiller (q v) and Elias Rossbach (q v) The glasses were richly ornamented by both cutting and engraving Characteristic of them are decorative borders of formal flower motifs, polished in the early period of the eighteenth century and otherwise unpolished Later, borders of lozenge shaped cutting became fashionable After 1730, lavish gilt decorations were favoured For the same period heavy feet and variously cut baluster stems, often with a large air bubble inside, are typical Mythological and military scenes in unpolished engraving grace the entire surface of the vessel [Fig 154]

References Robert Schmidt *Brandenburgische Glaser* Berlin 1914

PRESSED GLASS Molten glass is poured into a mould, and a plunger presses the glass mass into the mould giving it the desired shape and pattern The technique was developed in England and in America at the beginning of the nineteenth century, although it did exist in the ancient world, as shown by Roman ribbed bowls or the Murrhine bowls In the nineteenth century pressed glass was first produced as a cheap substitute for cut crystal glass, but modern glassmakers use this technique to produce vessels which are not intended as imitations of finer products, but which exhibit certain qualities of their own

PROCHUS Ancient cone shaped ewer, certainly used for wine [Fig 28]

PYXIS Ancient cylindrical vase with or without cover

RAVENSCROFT, GEORGE 1618–1681, English glass maker, founded a glasshouse in Savoy in 1673 A year later he obtained a patent running for seven years for the production of glass-of lead Many of his glasses bear the raven's head seal

References W B Honey, *English Glass* London 1946 W A Thorpe, *English Glass* London 1949

REICHSADLERHUMPEN cylindrical glasses with a representation of the Imperial Eagle in enamel paint and the coats of arms (usually forty eight) of the *Heiligen Romischen Reiches samt seinen Gliedern* (The Holy Roman Empire together with its Member States) arranged on the wings in the so called Quaternion System This heraldic scheme is derived from Peter von Andlaus s *Imperio Romano* of 1460 and from the related illustration in Hartmann Schedel s *Weltchronik*, Nuremberg 1493 *Reichsadlerhumpen* were made in the last quarter of the sixteenth century and throughout the seventeenth mainly in Bohemia Until about 1590 a crucifix is to be seen in the centre of the eagle later the imperial orb [Fig 130]

Reference Walter Stengel *Reichsadlerglaser Grupp erungsversuche* in *Kunst und Kunsthandwe k*, Vienna 19 1916 p 322 338

ROCK CRYSTAL clear translucent natural product pure quartz (SiO_2) In ancient times it was cut by artists into splendid vessels and was favoured from the time of the Renaissance for cutting in intaglio and after 1600 in high relief In the history of glass making and glass refinement rock crystal had great influence The main epochs of glass cutting the Roman period the Fatimid era the beginning of glass engraving in Europe in the seventeenth century and Bohemian engraving in the eighteenth century were strongly influenced by rock crystal cutting

ROMER Drinking glasses consisting of a core wound foot they have hollow stem with prunts and a spherical bowl They are almost always green in colour The *Romer* was produced when the lip of earlier vessels was transformed into the liquid containing part at the beginning of the sixteenth century in the Rhineland achieving enormous size in Holland during the seventeenth and eighteenth centuries and often engraved in diamond point technique It has remained the typical German form of wine glass up to the present day Rademacher states that the name results from the admiration for Roman glass still felt in Cologne in the late Middle Ages [Fig 106]

Reference Franz Rademacher *D e Deutschen Glaser des M ttelalters* Be l n 1963

ROSSBACH ELIAS glass engraver who worked in Berlin from 1727 to 1741 then in Zechlin until his death in 1765 Eight of his pieces are known signed Rossbach Fecit Berlin Rossbach is one of the best glass engravers of the eighteenth century His delicate work is the equivalent on glass in spirit and technique of the Watteau painting executed on porcelain [Fig 154]

Reference Ekhart Berckenhagen, *Berliner und Märkis he Gläser* Darmstadt 1956

RUBY GLASS Produced by adding gold chloride The question of whether Johann Kunckel (q v) was actually the inventor of ruby glass is much debated amongst experts A physician Andreas Cassius of Hamburg in 1676 reported to Kunckel his discovery of the red colouring properties of gold chloride In 1679 Kunckel mentioned ruby glass in his *Ars Vitraria* but kept the recipe secret At the same time however ruby glass was produced in southern Germany The peculiarity of the process for making ruby glass lies in the fact that the glass attains its deep red colour only after reheating at first it appears grey [Figs 141, 142]

RUSSELBECHER Variously known as trunk beakers or claw beakers are Rhenish and Frankish vessels of the fifth to seventh century in green or more rarely blue glass with hollow trunk like appendages drawn downwards in two to three rows of five to seven trunks [Fig 47]

Reference Fritz Fremersdorf *Zur Geschichte des Frankischen Rüsselbechers Wallraf Richartz Jahrbuch* N F Cologne 1933/34 p 7ff

RUSSIAN AND SOVIET GLASS The centre of Russian glass making in the eighteenth century was St Petersburg which surpassed Moscow where glass houses had been in existence since the seventeenth century The St Petersburg engraved glasses like those produced in Hamburg in the second decade of the eighteenth century (both were produced exclusively for the Tzar s court and the aristocracy) differ very little in style from the usual European glass of the time In the second half of the eighteenth century a certain resemblance to St Petersburg porcelain is noticeable particularly in the milk glasses of the late eighteenth and early nineteenth centuries A Russian speciality is a fondness for mosaic work which has been evident in all periods in the eighteenth and nineteenth centuries as well as the present day The Soviet Union now possesses a modern and versatile *glass industry which can supply the country s enormous* need for plate glass technical and industrial glass The main manufacturer is Gusj

Reference B A Shelkown kow *Glaskunst in Rußland* in *Kunstglas und seine Verwendung in der Archi ektur* Len ngrad Moskau 1953 (Russ) B A. Shelkownikow *Russian Glass of the E ghteenth Century* n *Journal of Glass Studies* The Corning Museum of Glass Corning Glass Centre, Corning, New York, Vol 2 1960

SANDBLASTING a stream of sand is directed under high pressure onto the surface of the glass attacking it and rendering it matt Skilful use of the technique can produce effects of different quality and depth from slight grazing to deep cutting of the glass Sandblasting was invented in the U S A in 1871 [Figs 229–231]

SANG ANDREAS FRIEDRICH Thuringian glass-engraver of considerable importance Court engraver to Duke Ernest Augustus of Saxe Weimar The records show that he was in Erfurt during the year 1719 in Weimar from 1723 to 1732 and then in Ilmenau until 1747 He later worked in Holland and fundamentally influenced Dutch engraving in the second half of the eighteenth century Four signed pieces by Sang are known (Cologne Kunstgewerbe museum Dessau the Castle) showing his style He was *probably first influenced by Gottfried Spiller (q v) and the* Berlin school of engravers Later his large scale designs were abandoned for more finely detailed representations or

landscapes, enhanced by delicate *Laub und Bandelwerk* patterns The engraved areas are enhanced by surrounding cutting

References Walther Scheid g *Andreas Friedrich Sang* in *Glastechnische Berichte* Frankfurt a.M 10 1932 p 382–386 Annegrete Janda Bux *Der Thuringer Glasschnitt im 17 und 18 Jahrhundert* Leipzig Theses 1962

SAXON GLASS There have been numerous glasshouses in Saxony since the Middle Ages in the forest regions of that area, in the Vogtland and the Erzgebirge Enamel painting on glass was carried out in Saxony from the sixteenth century onwards, influenced by that of its neighbours, Bohemia and Franconia It is characterized by rim borders in white enamel dots on a gold ground, the remaining ornament being in various colours The metal is mainly colourless From 1610 till the beginning of the eighteenth century glasses unique to Saxony the *Hofkellereigläser*, were made and used in Saxon castles Saxon engraving and cutting was influenced both by the east and the west A typical feature of the Saxon covered goblets – probably manufactured at the Dresden glasshouse – is the horizontal oval facetting on the lower part of the bowl The relief portraits on the bowl are also usually indicative of Saxon origins The court glass engraver in Dresden was Johann Christoph Kiessling who died in 1744 and whose goblets were mainly decorated with hunting scenes Also belonging to the Saxon group of artists are the Weissenfels glass engravers Johann Naumann from Zittau, from 1680 to 1697 court glass engraver to Duke Johann Adolf I of Saxe Weissenfels, and Johann Georg Muller from Lauscha, who died in 1783 as glass engraver to the court of Saxony in Weissenfels [Fig 132]

References Sabine Baumann *Studien zum Sachsischen Glas des 18 Jahrhunderts* Leipzig, Theses 1954 Sabine Baumann *Sachsische geschnittene Gläser des 18 Jahrhunderts* Leipzig Theses 1958 Paul Frenzel, *Weissenfelser Glasschneider und ihre Pokale* in *25 Jahre Stadtisches Museum Weissenfels 1910–1935* Weissenfels 1935 p 35–40

SCHAPER, JOHANN A Nuremberg glass painter working from 1640 to 1670 The Schaper glasses show fine translucent enamel painting on the typical Nuremberg ball footed beakers Usually in coloured enamel, more rarely in *Schwarzlot* [Figs 133, 134]

SCHMELZGLAS (ACHATGLAS, CALCEDONIO) Mottled glass, produced by allowing glass of different colours to mingle when still liquid The terminology is confused in older literature It was first made in Egypt, but it played a most important role in the Venetian art of glass making Antonio Neri describes several methods of making a *Calcedonier* A similar product is *Karneolglas*, which has reddish veins and was produced in Venice from the seventeenth century onwards It must not, however, be mistaken for Egermann's lithyalin glass which was made in Bohemia in the first half of the nineteenth century [Fig 82]

SCHMIDT, HANS WOLFGANG A Nuremberg glass engraver working from 1676 to 1710 In contrast to Hermann Schwinger, who was fond of idyllic scenes showing shepherds, fisherman and hunters, Schmidt preferred stirring representations of a battle or a hunt taking place in a towering forest or on a wide plain encircled by tress

Reference Erich Meyer Heisig *Der Nurnberger Glasschnitt des 17 Jahrhunderts* Nuremberg 1963

SCHWANHARDT, GEORG, THE ELDER· 1601 to 1667, a Nuremberg glass engraver He inherited the privilege of glass cutting accorded to his master, Caspar Lehmann, and after his return from Prague in 1622 spread his knowledge of glass engraving in Nuremberg He is recognised as the artist who first employed the technique of polishing certain parts within the matt engraving in order to achieve an appearance of greater depth Erich Meyer Heisig has identified approximately fifty of his pieces

Reference Erich Meyer Heisig *Der Nurnberger Glasschnitt des 17 Jahrhunderts* Nuremberg 1963

SCHWANHARDT, HEINRICH 1624 to 1693 Nuremberg glass engraver, son of the above

Reference As above

SCHWARTZ, SAMUEL Born in about 1681, died in 1737 at Arnstadt in Thuringia (Germany) A glass cutter and engraver, he was employed at several Thuringian courts but worked mainly at Arnstadt He received his training most probably in Brandenburg in the first decade of the eighteenth century The frequently recurring decoration with pointed leaves at the base of the bowl is typical of Brandenburg glasses Schwartz's glasses were mainly produced at the time when festoon and ribbon decorations were in fashion, many of them have cut stems

Reference Annegrete Janda Bux *Der Thuringer Glasschnitt im 17 und 18 Jahrhundert* Thesis University of Leipzig

SCHWARZLOT Method of decoration For explanation see (pl 133/134)

SCHWINGER, HERMANN 1640 to 1683, a Nuremberg glass-engraver He signed some of his pieces "Herman Schwinger" e g a hollow baluster stemmed glass with forest scenes architectural representations and military illustrations as seen in the Narodní Galerie, Prague Characteristic of his work is the idyllic landscape of the early Baroque type with small figures and atmospheric effects such as the heat of a fire, achieved by a slight grazing of the surface, which is partly polished or emphasized by diamond point engraving

Reference Erich Meyer Heisig *Der Nurnberger Glasschnitt des 17 Jahrhunderts* Nuremberg 1963

SCYPHUS Ancient Greek drinking vessel, squat, round or bell shaped, with handles on the sides

SHEET GLASS Trade term, as opposed to glass vessels It comprises window glass, mirrors or any glass which is used in flat panes In the beginning it was simply produced by

pouring the glass mixture onto a suitable surface Later a large blown bubble was given the form of a cylinder, and, after both ends had been removed, it was cut lengthwise with shears and flattened into a rectangular sheet In another process, the bubble was opened at one end and then rapidly rotated on the rod after reheating in the furnace Thus by making use of centrifugal force it was turned into a circular pane, which was later cut into pieces as desired Since 1688 a rolling process has been in use, it was invented by Lucas de Nehou By this method the liquid metal is poured onto a flat iron surface and then rolled in a semi liquid state In this century sheet glass is produced mainly by the 'broad glass" process, the molten glass is directly drawn from a tank This technique is possible on account of the tenacity and ductility of the material

SIDONIAN MOULD BLOWN VESSEL These were made in the first century A D in the Eastern Mediterranean with Sidon as the main centre of manufacture They are in blue, green or clear glass They were blown into clay moulds with a decorative impression on the inside The decoration thus obtained bore a strong resemblance to that of Greek pottery of the Hellenistic period The Sidonian mould blown glasses are sometimes furnished with the name of the maker in raised letters on the handle or body of the vessel The most frequent names are Ennion, Artas, Ariston, Meges Eryncios, Sometimes Sidon is mentioned as the place of manufacture, e g Ariston Sidoni In view of the trade with Rome, the names are sometimes given in two languages, Greek and Latin (Sidon became Roman in 63 B C , today it is known as Saida, in the Lebanon) Some Sidonian glasses bear the inscription in Greek "Buyer, think of the giver ' The vessels take the form of bottles, beakers, and amphorae, often six-sided or cylindrical, the decoration consits of Greek motifs [Fig 13]

SILVER STAIN Silver chloride in an acid solution used to produce a yellow coloured surface in glass Silver nitrate is used to obtain a metal which is yellow throughout

SITULA Egyptian bucket shaped bowl

SNAKE TRAILED VESSELS Glass vessels produced mainly in Cologne glasshouses in the second, third and beginning of the fourth century A D , with applied thread decoration usually in irregular winding patterns, although sometimes in spirals, ivy motifs and other motifs related to Germanic symbolism They constitute a small group among those vessels showing trailed decoration The best piece of this type is the pilgrim s bottle, known as the *Meisterstuck* in the Romisch Germanisches Museum in Cologne [Figs 32–35]

Reference Fritz Fremersdorf *Rom sche Gläser mit Fadenauflage in Koln Die Denkmaler des romischen Koln* Vol V Cologne 1959

SODA An alkaline substance, sodium carbonate (Na_2CO_3) Used as flux in glass making Egyptian glass of the second milennium B C contained about 15 % soda obtained from the alkaline lakes or indirectly by burning certain marine plants Inscribed tablets of the Assur Bani Pal revealed recipes for glass, mentioning the use of ash of *Salicornia herbacea* or Glasswort Venetian glass was made with soda which was mainly imported from Egypt and Syria In modern times soda is prepared from water, salt (NaCl), ammonia and carbon dioxide (Solvay process)

SPANISH GLASS In its earliest period Spanish glass was a mixture of Moorish Islamic and Venetian influences, developing in the seventeenth century indigenous forms such as the *porrón*, *cántaro* and the *almorrata* [Fig 90–93]

Reference Alice Wilson Frothingham *Hispan c Glass* New York 1941

SPECHTER A tall cylindrical glass or *Stangenglas*, with an applied foot The name is derived from the area which first produced it, the Spessart Forest Region

SPILLER GOTTFRIED Glass engraver, born c 1663 in the Hirschberg Valley in Silesia a pupil of Martin Winter (q v) from 1675 in Potsdam, worked as a glass engraver from 1683 in Berlin, and was from 1702 until his death in 1728 *Koniglicher Glasschneider* in Berlin His work belongs to the High Baroque period The figures in his designs are deeply cut (up to 7 mm) into very thick glass (up to 10 mm) resulting in a three dimensional effect Spiller signed one rock crystal jug G Spiller ' (Cicerone 1916, p 89) All his pieces are identifiable by their unique style

Reference Robert Schmidt *Brandenburgische Gläser* Berlin 1914

STANGENGLAS Cylindrical drinking vessel dating from the fifteenth to the seventeenth century usually showing decoration in the form of prunts, diamond point engraving or enamel painting [Fig 104]

STEUBEN GLASS Art pieces from the Steuben Glassworks in Corning, New York Since the reorganisation which took place in 1933 the Steuben Glassworks have been among the leading manufacturers in the U S A They produce highly individual pieces employing the best craftsmanship and high quality material Attractive glass engraving is a characteristic of their work. The main designers are Sidney Waugh and John Monteith Gates [Fig 200]

Reference E M Elville *The Collector s Dictionary of Glass* London 1961

SULPHIDES See Crystallo Ceramie

SURFACE STAINING This is achieved by the application of metal oxides to the glass surface and reheating For example yellow tones are obtained by using silver oxides ruby colours by copper oxide, etc [Figs 163 164]

THURINGIAN GLASS *Waldglas* was made in the Thuringian Forest from the fifteenth century possibly earlier Numerous glasshouses were founded in the sixteenth and seventeenth centuries From 1633 to 1639 under Duke Bernhard of Saxe Weimar a glasshouse employing Venetian craftsmen

existed in Tambach producing the *Tambacher Flaschen*, bottles with six or eight pass rings From the end of the seventeenth century glass engraving of a good standard was carried on at some of the neighbouring courts, only to be eclipsed by the growing porcelain industry in the mid-eighteenth century The most important glass engravers of this period are Caspar Creutzburg, Gotha from 1690, the artist J H, Sondershausen and Arnstadt, Samuel Schwartz (q v) Gotha and Arnstadt Andreas Friedrich Sang (q v), Weimar, Ilmenau Arnstadt, Georg Ernst Kunckel (q v), Gotha A Thuringian characteristic is pseudo facetting, i e moulded stems of covered goblets No glass cutting of particular interest developed in Thuringia During the nineteenth century Ilmenau became important as the centre of technical pharmaceutical glassmaking, whereas Lauscha, founded in 1595, turned to the production of simpler bottle-glass and to pieces made at the lamp [Figs 144 151, 241]

References Walter Scheidig, *Thuringer Glasschneider und Glasmaler im Dienste des Herzogs Ernst August von Sachsen Weimar* (1708–1748) in *Zeitschrift des Vereins fur Thuringische Geschichte und Altertumskunde* N F Jena Vol 29 1931 p 476–482 Walther Scheidig *Andreas Friedrich Sang* in *Glastechnische Berichte* Frankfurt a M 1932 10 p 382–386 Annegrete Janda Bux *Der Thuringer Glasschnitt im 17 und 18 Jahrhundert* Leipzig Thesis 1962 Wilhelm Stieda, *Thuringische Glashutten in der Vergangenheit* Leipzig 1910 Barbara Pischel, *Die Thuringische Glasblaserei* Weimar 1936

TIFFANY, LOUIS COMFORT 1848–1933 New York glass-artist and painter, son of a silver ware manufacturer, founder of the Tiffany Glass and Decorating Company New York His 'Favrile' glass, with its metallic, lustred surface had a great influence on the glass of his European contemporaries, and is a typical product of the Art Nouveau period His pieces bear a finely etched signature under the foot [Figs 183 184]

Reference Hans Ulrich Haedeke *Glas* in *Jugendstil Der Weg ins 20 Jahrhundert* Helmut Seling Heidelberg/Munich 1959 p 325 340 figs 183 184

TRAILING A decoration known since Roman times A lump of softened glass is drawn out into a thread and attached to the surface of a heated vessel This technique has been applied throughout the ages but was especially favoured in medieval glass decoration and for popular glass of the following centuries Handles of ancient glass vessels are often made of twisted glass threads, the feet of fifteenth and sixteenth century *Romers* were produced by winding soft glass threads concentrically round a wooden mould Theophilus in his *Schedula diverarum artium* (2nd book, chapter X) gives the following instructions for trailing 'Take also a lump of glass out of the furnace in such a manner that it produces a thread, which you then attach to the desired point on the vessel, turning the latter near to the flame so that it clings to it " See also *latticino* [Figs 76–78]

TRICK GLASSES Constructed so as to render the process of drinking difficult for the would be imbiber, or to produce some amusing effect They were most popular during the late Renaissance, although all periods have produced this kind of trick vessel, including the Roman and all post-medieval periods

The *Kutterolf* might be considered to belong to this group of glasses, as might all other vessels designed to show the virtuosity of the glass blower, such as human and animal figures, musical instruments and vessels in the shape of all kinds of objects, if they were intended as drinking vessels Some trick glasses were of religious origin, for example the glasses made in the shape of a head, and particularly the Phallus glasses, which can be traced to the fertility rites practised by many ancient civilisations, but whose function degenerated into the realm of vulgar joking during the Middle Ages [Figs 121, 122]

TRULLA A shallow ladle for serving wine

TRUMPER JOHANN FRANZ Hessian glass engraver of the first half of the eighteenth century The only signed work we possess, an engraved cylindrical vessel in the collection of the Museum fur Kunsthandwerk in Leipzig (about 1730), shows a certain resemblance to the Silesian style of decoration (foliage borders)

References Walther Scheidig *Thuringer Glasschneider und Glasmaler im Dienst des Herzogs Ernst August von Sachsen Weimar* (1708–1748) in *Zeitschrift des Vereins fur Thuringische Geschichte und Altertumskunde* N F., Jena, Vol 29 1931, p 476 *Kunsthandwerk und Plastik aus Deutschland im Museum des Kunsthandwerks Leipzig* Anneliese Hanisch Leipzig 1961 fig 43

UNFIRED PAINTING The ornamentation of glass with enamels which are not subsequently fired Unfired painting is easier to execute, but less durable than fired enamel decoration [Figs 87–89]

VENETIAN GLASS Glass produced in Venice, i e in the Murano glasshouses The term is often applied to articles in the *façon de Venise*, but produced elsewhere, and tends to refer to any thin walled soda glass as opposed to the medieval *Waldglas* or the Bohemian cut potash lime glass Because of her world wide trading connections, Venice was in the happy position of having an assured supply of raw materials and a ready market for her glass products These advantages combined with the skill of her craftsmen, made Venice the capital of glass making during the sixteenth and seventeenth centuries The finest products of the industry are the enamelled glasses of about 1500, the crystal glasses of the sixteenth century, the *latticino* glasses of c 1600 and the winged glasses of the seventeenth century Changes in artistic taste towards the end of the seventeenth century transferred the supremacy Venice had enjoyed to Bohemia [Figs 66–86]

References Gudmund Boesen *Venetianske glas på Rosenborg* Copenhagen 1960 Karel Hetteš *Venezianisches Glas* Prague 1960 Giovanni Mariachen *Edle Glaser von der Antike bis Murano* Munich 1962 Ignaz Schlosser *Venezianer Glaser* Vienna 1951 *The Corning Museum of Glass Three Great Centuries of Venetian Glass* Exhibition catalogue Corning New York 1958

VERZELINI, G Italian glass maker who founded the first London glass house for vessels in the *façon de Venise* in 1575 He died in London in 1606

References Robert Schmidt *Europaisches Glas Die Sammlung Wilfried Buckley* Berlin 1927 Francis Buckley *A History of old English Glass*, London 1925 W B Honey *English Glass*, London 1946

WALDGLAS A glass of primitive quality, not deliberately coloured and therefore usually green, or sometimes brown, produced in Central European glass houses from the fifteenth to the eighteenth centuries These glass houses were mainly found in the wooded regions of the Mittelgebirge mountain range, where an abundance of fuel was at hand Hence the name *Waldglas*, for *Wald* = wood The glass consisted of sand containing iron and therefore green, and potash obtained from beechwood ash German *Waldglas* provides the strongest possible contrast to the thin, colourless Venetian metal, which as a flux contained soda imported from the Orient [Figs 100–118]

WILLKOMM A type of *Humpen* of remarkable size, made from the sixteenth to the eighteenth century, usually enamel painted The name of these glasses, sometimes capable of holding more than five litres, derives from the custom of using the *Willkomm* to drink to the health of a visitor, thus welcoming him Mathesius (q v) mentions the "*unflatig grossen Willkomm*" as ' foolish vessels which one can hardly lift", (*unflatig* = coarse, ugly)

WINDOW PANES Already known in Rome in Caligula's time Pieces measuring 30 × 60 cm (1′ × 2′) are extant They are about 4 cm (1½″) thick in the centre and taper towards the edges, they were produced by rotation on the iron (see sheet glass) and bull's eyes

WINGED GLASS Originally Venetian wine glasses with wing like appendages, made from pinched glass threads, sometimes adopting the form of a double headed eagle, sometimes that of two horses They came into the fashion about 1600 They were popular throughout Europe and were imitated in glasshouses in other parts of the continent Sometimes the appendages take over the role of the stem, and become heart shaped, or are ingeniously curved into a figure eight [Figs 79–81]

WINTER, FRIEDRICH Silesian glass engraver In 1690 and 1691, he set up a water power mill for glass-engraving in Petersdorf in the Hirschberg Valley The heavy Silesian cameo relief glasses, which may be grouped together with the goblets showing the coat of arms of Count Schaffgotsch, which date from the end of the seventeenth to the beginning of the eighteenth century, are probably his work

WINTER, MARTIN Glass engraver in the service of the Elector of Brandenburg in Potsdam, brother of the engraver Friedrich Winter of Petersdorf in Silesia His work shows the Silesian style of engraving In 1684 he received a privilege for *Hochschnitt* or cameo relief engraving from the Elector In 1687 he set up a water power mill in Berlin for cutting and engraving, and had as his pupil his nephew Gottfried Spiller

Reference Robert Schmidt, *Brandenburgische Glaser*, Berlin 1914, Ekhart Berckenhagen, *Berliner und Markische Gl ser*, Darmstadt 1956

WOLFF, DAVID Died at the Hague in 1808, foremost Dutch stipple engraver on glass Glasses bearing his signature date from between 1784 and 1796 [Fig 139]

Reference Fancis Buckley, *D Wolff*, London 1935

ZWISCHENGOLDGLÄSER (see also Double Glass) Bohemian two layer glasses from the period of about 1730–1740 An outer glass, which was usually without a bottom, was made to fit exactly round an inner one The outer surface of the inner glass was covered with engraved or painted gold leaf The joint is usually beneath the rim or sometimes further down [Figs 160, 161]